The Dissertation Committee for Enrico Grube certifies that this is the approved version of the following dissertation:

The Process of Experience

Committee:

Michael Tye, Supervisor

Josh Dever

Robert Koons

Adam Pautz

Mark Sainsbury

Susanna Siegel

David Sosa

The Process of Experience

by

Enrico Grube, M.A.

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For my parents,

Diethelm & Sylvia Grube

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The Process of Experience

Enrico Grube, Ph.D.

The University of Texas at Austin, 2013

Supervisor: Michael Tye

Perceptual experience seems to relate us not only to non-temporal features of objects such as colors and shapes, but also to certain temporal properties such as succession and duration, as well as to the sensible properties of temporally extended events such as movements and other kinds of change. But can such properties really be represented in experience itself, and if so, what does this tell us about the nature of experience? Different theories of time consciousness answer this question in different ways. Atomists deny that experience represents temporal properties and maintain instead that in experience we only represent non-temporal properties, "snapshots" of the world. Retentionalists maintain that, while experiences may be instantaneous mental states, they simultaneously represent temporally extended periods of time, while extensionalists claim that experiences themselves extend in time, either only for very short periods or over whole streams of consciousness. I articulate and defend a version of the latter view, which I call 'simple extensionalism', lay out its ontological foundations, and argue that it accounts for the temporal phenomena of perceptual experience better than its rivals.

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Chapter 1: The Varieties of Time Consciousness

1. Introduction: Temporal Experience and Its Contents

Suppose you are sitting in a street café on a warm summer afternoon. You watch people walking by on the nearby sidewalk and cars passing by on the street. You hear the soft melodies of piano music out of the speakers of the café, just loud enough to be audible behind the muffled noises of various conversations. All the while you feel a lingering cool breeze on your face and taste a fading, slightly bitter aftertaste of espresso.

The multi-modal episode of conscious experience that you are undergoing during this period is related to time in a variety of ways, all of which can be grouped into two categories: time as it is represented in experience on the one hand, and the temporal properties of experience itself on the other.

First and foremost, you seem to be perceptually aware of various events as they are unfolding in time.[1] You see objects moving, you hear a certain pleasant sequence of

[1] In what follows, I will use '(perceptual) awareness' and 'experience' interchangeably, ignoring the distinction introduced in Bengson, Grube, and Korman (2011) for purposes of simplicity. I also assume that experiences have representational content (cf. Dretske (1995) and Tye (1995)) and that they represent certain properties of objects, sensible properties like colors and shapes. I leave it open what kinds of properties can be sensible properties, or whether the representational

sounds, and you feel the breeze lingering and the taste fading. Perceptual episodes like these are ubiquitous. We rarely if ever perceive anything without being aware of a host of aspects of the world that necessarily occur over extended periods of time. They are an integral part of the phenomenal character of experience, of "what it is like" to experience our surroundings. There is something it is like to see a car moving, just as there is something it is like to hear a melody, or so we standardly suppose.

You also seem to be perceptually aware of some properties and relations that are temporal in a stricter sense of that term. Perhaps you experience the passing of a car as occurring *simultaneously* with a certain piece of melody, or one person's passing by as *happening after* or *succeeding* the passing of another. It is also often claimed that we experience whatever we do as *occurring now* or as *being in the present*.

While it might be difficult to say exactly which properties and relations are to be counted as "temporal" in this sense,[2] it is important to distinguish from the outset this class from that of those properties and relations which, like movement and other kinds of change,

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content of veridical experiences also involves particular objects, as Soteriou (2000) and Tye (2009, ch. 4) maintain. Thus talk about the experience of temporally extended events should be understood in terms of the experience of certain sensible properties and relations involved in those events. Furthermore, I believe that every substantial claim in this dissertation could be rephrased to suit those philosophers who, like Alston (2005), Martin (2002, 2004) or Travis (2004), claim that experience is not representational.

[2] As the examples show, the classic A-properties (*being present, being past*) and B-properties (*being earlier/later than*, *being simultaneous with*) seem to be a good first pass; but I also want to include metrical properties (*lasting two seconds*) and other types of duration (*being an instant*, *lasting longer/shorter than*).

necessarily take time. The two classes are not equivalent. Not every temporal property is such that its instances are temporally extended. Trivially, instances of *being an instant* are not. Neither are instances of *being present* if we assume Augustine's view that the present moment has no duration.[3] Conversely, most properties and relations that require temporal duration should not be counted as temporal properties and relations. Consider for instance the relation of *watching*. Watching an object necessarily takes time. It also entails certain temporal properties or relations: it has duration and a temporal order. But it clearly is not itself a temporal property or relation. Neither is riding a bicycle, sewing, talking, changing a tire, nor indeed moving from *a* to *b*. Without some distinction or conceptual regimentation here every type of process would have to count as a temporal property or relation; but these seem to be two distinct kinds of phenomena, and the question of whether, on a considered view, they can be represented in perceptual experience may have a different answer in each case.[4, 5]

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[3] See his *Confessions* (Book XI, § 19-20). Here is the argument in a nutshell: "If we can think of some bit of time which cannot be divided into even the smallest instantaneous moments, that alone is what we can call 'present'. And this time flies so quickly from future into past that it is an interval with no duration. If it has duration, it is divisible into past and future. But the present occupies no space." (Augustine 398/1991: 232). Of course it doesn't follow from this that time is infinitely divisible, but only that if it has smallest parts, these have no duration.

[4] That being said, from now on I will sometimes use the terms 'temporal experience' and 'temporal property' when I have the experience of certain temporally extended properties and relations in mind; but this is only for convenience. The paradigmatic cases under discussion in the literature of time consciousness are the experience of *movement* (in visual experience) and *succession of sounds* (e.g. melodies, in auditory experience). My discussion will focus on these cases, as well.

[5] Thanks to John Bengson for discussion on this point.

The first way in which conscious experience relates to time thus concerns the contents of experience; and the corresponding question is which of the aforementioned temporal phenomena (temporally extended properties and relations, temporal properties and relations), if any, can be represented in sensory experience, and which only in perceptual beliefs or other doxastic states based on experience.[6]

However, conscious experience does not only represent temporally extended properties; it is also itself temporally extended. Watching people walking by does not only represent a temporally extended event, but is itself such an event, with a beginning, an end, and a temporal order, or again so it is natural to suppose. The same goes for many other kinds of conscious episodes, whether it be the hearing of a melody or the feeling of a shiver running down one's spine. They seem to be temporally extended events, of the same kind as explosions, weddings, or horse races – occurrent particulars that take time.[7]

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[6] The general debate about what kinds of properties can be represented in experience, which takes place between *conservatives* like McGinn (1982) and Tye (1995) who believe that experience only represents "low-level properties" like colors, shapes, spatial location and motion, and *liberals* like Siegel (2006b, 2010) and Bayne (2009) who believe that experience also represents some "high-level properties" like *being a pine tree*, or *being a telephone*, is of course closely related to this question. However, it also runs orthogonal to our concerns in interesting ways. For one, even conservatives typically include *motion* into their list of properties that are outputs of the sensory modules and thus to be included in the list of "low-level properties". But in the literature on time consciousness it is sometimes denied that an object's *moving,* or *moving from a to b* can be represented in experience (see chapter 2 for discussion). On the other hand, most or all of the temporal properties mentioned in footnote 2 might be excluded by liberals as well, on the grounds that these properties don't pass the relevant tests for a property's being apt to be represented in experience.

[7] This assumption is common but not uncontested. See Byrne (2009) and my discussion of his objections in chapter 3.

Taken at face value, this supposition gives rise to a further set of questions. If episodes of experience are temporally extended events, how many of these events are there within any given period of consciousness? How many experiences have you had since you woke up this morning, or since you started to read this chapter? What, in general, are the conditions under which experiences compose other experiences?

These questions cannot be answered independently of an account of the ontology of experience; and to see what such an account requires I think it useful to take a brief look at the analogous problem of ordinary objects, and the various views that have been developed to solve this problem.

To that end, compare the question: "How many atoms are there in this room?" with the question: "How many objects are there in this room?", asked with respect to a cluttered living room. If the first of these seems hard or even impossible to answer, this is only because it is impossible for us to count the atoms. Presumably, for God or a future super-computer it would not be a hard question at all.[8] Its difficulty lies only in our cognitive and discriminatory limitations; but there does not seem to be any "deep" metaphysical problem here. The second question, on the other hand, is not even answerable in principle until we have a theory that provides criteria for what is required for something to be an object.

[8] Provided that it is not vague which spacetime region is picked out by 'this room.' Otherwise, suppose the question is asked about a precise spacetime region.

Various conceptions of ordinary objects aim to do just that. For example, nihilists maintain that there are no composite objects and that there are therefore exactly as many objects in any given spacetime region as there are mereologically simple, non-composite objects in that region. They typically maintain further that there are *many* such objects, microscopically small simples. Call this view "reductive atomism."[9] However, nihilism is also compatible with existence monism, the view that there is only one simple, all-encompassing object (four-dimensional spacetime, "the blobject").[10]

Universalists, on the other hand, maintain that any arbitrary plurality of objects is such that those objects compose a further object, and hence that there are such strange objects as the sum of my nose and the Eiffel tower.[11] According to universalists, then, there are exactly as many objects in any given spacetime region as there are possible sums of the actual simples in that region.

Finally, defenders of the ordinary conception of objects maintain that there are ordinary objects like tables and chairs and trees but no extraordinary objects like the alleged object

[9] Atomists include Hossack (2000) and Dorr (2005). Van Inwagen (1990) defends a similar view, according to which the only composite objects that exist are organisms, objects which constitute a life.
[10] See Horgan and Potrč (2008).
[11] See e.g. Quine (1981) and Sider (2001), among many others.

corresponding to the sum of my nose and the Eiffel tower.[12] The challenge for such theorists is, of course, to find non-arbitrary restrictions on composition which render such a view plausible.[13]

Just as various conceptions of ordinary objects provide criteria for counting them, so too *mutatis mutandis* for the various conceptions of temporal experience.[14] And just as views about the conditions under which objects compose further objects can be divided into those according to which there are some collections of objects which compose further objects and those which deny this, so views about the conditions under which experiences compose further experiences can be divided into those according to which some successions of experiences are such that those experiences compose further experiences and those which deny this.[15]

Among the former, the analogue of universalism, which would be the view that every arbitrary succession of experiences amounts to a further experience, is not defended by anyone, since it is not very plausible. There have to be *some* conditions that have to

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[12] See Korman (2010).

[13] This is by no means an exhaustive list of views. For a comprehensive taxonomy see Korman (2011).

[14] Since my topic is time consciousness, I will limit myself to the problem of counting experiences *over time*. Some analogous problems can be raised for the composition of experiences *at a time*, as well. See Bayne and Chalmers (2003), Tye (2003, ch. 1), and Bayne (2010, ch. 2) for discussion.

[15] There is a limit to the analogy, of course. Not just any collection of experiences could compose a further experience. The collection has to be a succession, which is to say, a temporally structured collection.

obtain for a succession of experiences to amount to a composite experience. At the very least, they must constitute a temporally contiguous series in the same stream of consciousness. The question then becomes whether there are any further conditions, and if so what these conditions are.

Among the latter, reductive diachronic atomists maintain that there are only successions of temporally atomic experiences but no temporally extended experiences composed of them, while defenders of the analogue of existence monism, the *one experience view*, maintain that we are undergoing only one experience per stream of consciousness.

It is important to note that the composition question is independent of the question of whether (and which) temporal properties can be represented in experience, and that hence all the options listed above are at least *prima facie* compatible both with a full fledged realism about the experience of temporal properties and with its denial. This is because the composition question concerns the temporal structure of experience itself and not the temporal properties of its contents. However, as we will see, philosophers typically try to explain the possibility or impossibility of our representing temporal properties in experience by way of giving an account of its temporal structure. A theory of the relationship between consciousness and time will thus have to address both issues and critically evaluate any purported explanatory relations between them.

A further temporal property of experience that needs to be mentioned here, since it lies at the heart of the problem of counting experiences, is its apparent *continuity*. Conscious experience seems to be a continuous, seamless passing from one object to the next without noticeable gaps or interruptions. This is why William James' metaphor of the stream of consciousness strikes us as quite appropriate: during periods of wakefulness we seem to undergo a constant homogeneous "flow" of experience.

As in the case of temporal extension, we have to be careful to distinguish the claim that experience is continuous from the claim that it represents some properties and relations as continuous, that continuity is a part of how things seem to us perceptually, for instance when we see an object moving or hear a long enduring sound. If continuity is an essential feature of experience itself, then it is also a feature of experiences that represent only discontinuous properties. In a world where objects move through space by vanishing and reappearing instantaneously at distant places, they can still be represented as such in one continuous experience.

Opinions differ not only on whether experiences are, in fact, continuous, but also on what this claim amounts to. William James gives a purely negative characterization of continuity in his account of the stream of consciousness, as "that which is without breach, crack, or division" (1890: 237); and he adds that even if we allow for an objective time-gap or interruption within a stream of consciousness, "the consciousness after it feels as if

it belonged together with the consciousness before it, as part of the same self" (ibid.). Thus according to James, the continuity of experience consists in subjective gaplessness.[16] Others, like Dainton (2010), endorse a much stronger continuity thesis, while still others, like Strawson (2009, ch. 5), deny James' claim and maintain instead that consciousness is radically discontinuous.[17]

This concludes my introduction of the different aspects involved in the relationship of conscious experience to time. Every theory of time consciousness has to address the question of whether and to what extent succession, motion and other temporal properties can be represented in experience, as well as the question of what temporal properties experiences themselves have, in particular whether or not they are essentially temporally extended and continuous, and what it tells us about the nature of experience if they are.[18]

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[16] James is also careful to distinguish this feature from phenomenological continuity as represented in consciousness, which according to him consists in the fact "that the changes from one moment to another in the quality of the consciousness are never absolutely abrupt." (Ibid.)

[17] I will discuss Dainton's account of temporal experience in chapter 3 and Strawson's objections in chapter 4.

[18] Are there any other temporal properties of experience that need to be taken into consideration here? Some philosophers, for instance Dainton (2006, 2008a, 2010), Tye (2003), and Rashbrook (2010), like to frame their discussions of time consciousness around the notion of *diachronic unity* of consciousness. However, I find it hard to see what diachronic unity of experience is supposed to be if not a combination of temporal extension, continuity, and the representation of temporally extended events.

2. The Puzzles of Temporal Experience

We can readily see what is problematic about the claims that experiences are temporally extended and continuous, because the question of how to count experiences links them directly to the question of the nature of experience. But what is so puzzling about the representation of temporal properties in experience? Why do we need a theory here in the first place? This is not a trivial question. There is a presumption of realism when it comes to the perception of certain basic temporally extended phenomena like motion of a certain speed, succession of sounds, or sufficiently fast color change. It just seems obvious that they belong to the sensible qualities just as surely as color and shape. And for the most part, philosophers adhere to this presumption. Barry Dainton (2006: 115) even takes the fact that our experience of change is just as direct and immediate as our experience of shape and color to be a "phenomenological constraint" on any account of temporal experience.[19]

At the same time, this seemingly innocuous fact has been the subject of profound puzzlement among philosophers, so much so that some end up denying it. There is, however, no consensus on what precisely the puzzle is. Instead, various formulations of puzzles of temporal experience can be found in the literature, with varying diagnoses of

[19] See also Foster (1982: 255).

where the problem is to be found. In what follows, I shall present and criticize two of them, before giving an account of what I take to be the core of the problem.

2.1. Dainton and Reid: Experiencing the Moment

Let's start with Barry Dainton's (2010, §1.1) formulation of what he takes to be the "paradox of temporal awareness", since his comprehensive entry in the *Stanford Encyclopedia of Philosophy* can be considered as providing a sort of "textbook" formulation of the problem:

> We can remember the past and anticipate the future, but we are only directly aware of what is present – or so it is natural to say and suppose. But the present, strictly speaking, is momentary. So if our awareness is confined to the present, our awareness must itself lack temporal depth. Hence we are led swiftly to the conclusion that our direct awareness cannot possibly encompass phenomena possessing temporal extension. We are thus confronted with a conundrum: it seems our awareness must extend over time, but it seems it can't.

On a charitable reading of this passage,[20] I think it amounts to the following argument (where (1)-(5) are to be read as universally quantified propositions):

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[20] Here and elsewhere in his work, Dainton seems to confound claims about the representation of temporally extended properties in perceptual awareness with claims about the temporal extension of awareness itself. This is programmatic for him, though, since he rejects *relationalism*, the

(1) If we are perceptually aware of a property *F* then *F* is present.

(2) If *F* is present, then *F* is momentary.

(3) So, if we are perceptually aware of *F*, then *F* is momentary.

(4) Temporally extended properties are not momentary.

(5) So, we are not perceptually aware of temporally extended properties.

The crucial premises are (1) and (2). But how convincing are they?

The only support for premise (1) that Dainton mentions is an intuitive contrast between perceptual awareness on the one hand, and memory and anticipation on the other, on the basis of which he seems to think that it is intuitively obvious that perceptual awareness represents only present properties. But is this supposition really as natural as he thinks it is? After all, not only does our brain need some time to convert e.g. retinal images into conscious visual episodes, but also light travels for some time before stimulating the retina, in the case of distant objects like stars for several years, so that the properties of which we are visually aware can be instantiated in objects that are years in the past.

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widely accepted claim that consciousness has an "act-object" or "awareness-content" structure (see Dainton (2006: 41-59)). His discussion of these issues is extremely confusing, since he seems to misunderstand what this claim is committed to. For instance, he seems to think that relationalism involves commitment to a "bare awareness" that could exist independently of any content. Intentionalists (e.g. Dretske (1995), Tye (1995, 2000)) who analyze the awareness-content relation in terms of a neural vehicle carrying information about external properties certainly need not accept such a commitment. Direct Realists (e.g. Campbell (2002), Martin (2004, 2006)) who analyze it in terms of subjects being related to mind-independent objects in most cases, where episodes of experiences "have as constituents mind-independent objects" (Martin (2006: 354)), need not accept it either, depending on how they analyze cases of hallucination.

Those who claim that in perceptual awareness we are related to sensible properties of distal external objects (e.g. Intentionalists, Direct Realists) will thus not accept premise (1) as it stands. To vindicate it, one would have to accept a theory according to which the sensible qualities are temporally proximal properties, as in certain sense datum theories, or perhaps theories that try to do without the notion of sensible qualities altogether, as the adverbial theory of perception.[21] That is quite a strong commitment to be saddled with.

Premise (2) seems even more dubious, because even if we accept the Augustinian view that the present is a durationless moment, it surely does not follow that every present property is a momentary property. Existence in the present does not preclude temporal extension, or so one would think. Even a sense-datum theorist would find it difficult to accept this premise, since properties of sense data are as they phenomenally appear to be, and temporal extension is certainly among the features things phenomenally appear to have. Thus even present properties of present sense data aren't necessarily momentary properties.

[21] According to traditional sense datum theories (e.g. Price (1932), Moore (1910)), perceptual experience directly relates us to non-physical objects that necessarily instantiate the properties which distal objects perceptually appear to have. It is open to the sense datum theorist to claim that this is a present relation. According to adverbial theories (e.g. Chisholm (1957)), sensible qualities are analyzed in terms of modifications of the experience itself rather than as properties of a distal physical object or proximal non-physical object. This modification can plausibly occur in the present, as well.

So, the initial prospects for this argument aren't good. Perhaps one could strengthen it by providing independent reasons for why sensible properties should be limited to properties that are instantiated in the present moment. What about the intuitive contrast between perceptual awareness, memory, and anticipation to which Dainton alludes? The claim that perception and memory are distinguished by their representing respectively what is present and what is past goes back to Thomas Reid, who in his *Essays on the Intellectual Powers of Man* (1785/1850: 200) puts it as follows:

> It is by memory that we have an immediate knowledge of things past. The senses give us information of things only as they exist in the present moment; and this information, if it were not preserved by memory, would vanish instantly, and leave us as ignorant as if it had never been.

In this passage, Reid talks about the necessity of mnemonic preservation of sensory input for immediate *knowledge* of past things; but a couple of pages later he endorses it also as a condition for *observing* motion: "the motion of a body, which is a successive change of place, could not be observed by the senses alone without the aid of memory" (Ibid.: 223); and he concludes that, strictly speaking, "no kind of *succession* can be an object either of the senses or of consciousness; because the operations of both are confined to the present point of time, and there can be no succession in a point of time." (Ibid.)

For Reid, this position seems to follow from a simple thought experiment: Take what we would ordinarily think of as an experience of a moving object and subtract all traces of memory from it, and you end up with a representation of a momentary position without motion, the immediate momentary "spearhead" of the stream of consciousness. Husserl seems to be guided by a similar intuition when he writes: "[I]t is conceivable that our sensations could endure or succeed one another without our being aware of it in the least" (1905/1964: 31-2); and he also attempts to account for the difference in terms of mnemonic preservation.[22]

Yet as compelling as it may seem at first blush, as a reason for the claim that perceptual experience represents only properties within the present moment and memory is needed to account for our awareness of motion, Reid's thought experiment is ineffective. There is, of course, an important phenomenological difference between, say, seeing a ball move and undergoing a succession of perceptual experiences of its last position; but it is by no means clear that this difference has to be accounted for by the presence or absence of some kind of memory rather than by the differences in the kinds of *experiences* involved. According to the model preferred by Reid and Husserl, the demarcation between sensation and memory is the present moment; and anything past can only be brought to awareness by a series of successive memories of past sensations. However, according to an alternative model, motion can be directly experienced without the aid of memory; and

[22] This is not to say that their views are identical. For more on Husserl's views on time consciousness see §3 below.

the difference to which Reid and Husserl point can be accounted for by differences within the faculty of perception rather than a subtraction of memory. Both models can readily explain the phenomenological differences in question, so no sufficient reason has yet been given to favor one over the other.

In the absence of a compelling reason to accept the claim that perceptual experience is limited to properties in the present moment, Reidian arguments fail to provide even a *prima facie* reason to question the presumption of realism about the perception of temporally extended properties. We can conclude that, despite their encyclopedic status, if it were just for arguments of this kind, it would be hard to see what the problem was.

2.2. Kelly: Experiencing at a Moment

Another family of puzzles proceeds from assumptions not about the actual temporal extension of the properties represented in experience, but rather about the way things are represented as being when we undergo an experience of movement or change. Witness Sean Kelly's (2005a: 224) formulation of the problem:

> [W]e seem to experience objects as moving *now*, at the moment we are having our experience of them. But all movement takes at least some time to occur, given the laws of physics, and all experienced movement takes some considerable time. […] If movements take place across time, therefore, it is difficult to imagine how

we could experience them as occurring at a moment. This is what I will call the philosophical problem of motion perception.

According to Kelly, the problem amounts to a systematic discrepancy between how things are experienced (viz., as occurring at a moment) and how they really are (temporally extended), a discrepancy that stands in need of reconciliation, since presumably an error theory about the phenomenal character of temporal experience does not seem to be a viable option.

This presumption is questionable, of course. After all, there may be a considerable evolutionary advantage in misrepresenting motion and other temporally extended properties as taking place within a moment. But let's assume for the sake of the argument that such an error theory is unacceptable. The question then becomes whether we really do experience things the way Kelly supposes; and in this case we do not have to resort to exchanging intuitions about phenomenology, since Kelly's analysis of the problem seems to be mistaken. He reasons as follows:

(1) We experience objects as moving now.
(2) If we experience objects as moving now, then we experience movement as occurring at a moment.
(3) So, we experience movement as occurring at a moment.

(4) Movement does not occur at a moment.

Kelly thinks that the challenge is how to reconcile (3) and (4). But what about (1) and (2)?

According to premise (1), *occurring now* is part of what is represented in perceptual experience itself rather than merely part of what we can come to believe or judge on the basis of undergoing an experience. This is true if we construe the contents of experience as accuracy conditions. To see this, consider the following example, due to Michael Tye (2003: 86):

> The reason why the experience I have of a tiny, twinkling star shape in the night sky, in the case that the star no longer exists, is inaccurate is that I experience the shape as being there *now*, when in reality at present there is nothing with that shape in the relevant region of the heavens.

So, if we suppose that the content of an experience determines whether or not the experience is accurate, there has to be a temporal constituent in it, since "tiny twinkling star shape in the night sky over there" does not constitute a full accuracy condition, while "tiny twinkling star shape in the night sky over there at present" does.

However, those who think that the contents of experience are specified by how things phenomenally appear to the subject (e.g. Byrne (2001)) should deny that there is such a temporal constituent.[23] To see this, consider a *slow vision world*, a world where there is a 10 minute delay between stimulus reception and the formation of a visual experience, where subjects are aware of this and learned to form the appropriate beliefs from birth onwards.[24] It would seem that in such a world, the way things visually appear to subjects could be identical to the way they visually appear in the actual world, even though nothing is experienced as being there *now*.

So, even though it may seem quite innocuous at first, (1) is controversial. It depends on one's conception of the contents of experience. But in any event, (2) seems to be false for reasons that are independent of these considerations, because there is simply no relationship between *occurring now* and *occurring at a moment* that would warrant such an inference.

Presumably, it can be true in general to say of an object that it undergoes a certain process now without being committed to the process's occurring at a moment. Thus it can be true to say of John that he is sailing around the world now without being committed to the occurrence of a momentary sailing. It suffices for the truth of such a statement that

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[23] For more on these two conceptions of contents of experience, see chapter 2, §2.
[24] Suppose, for the sake of the argument, that in slow vision world, the evolutionary process allows for the survival of such a species.

the moment of utterance is a temporal part of the interval during which John is sailing. Why should the same not hold, *mutatis mutandis*, for experiences of temporally extended properties and relations? Why can't I experience an object's changing color *now* without experiencing this change *as occurring at a moment*? No discriminating reason has been given why the inference in (2) should be valid whenever these properties occur as properties of experiences.

Perhaps one might respond on behalf of Kelly that one can know simply by introspection that one is experiencing an object's moving or changing color at one moment. However, it is doubtful that introspection can deliver such results. This is one of the lessons one can learn by reflecting on the widely discussed claim that experience is diaphanous or transparent.[25] Here is a canonical statement of this claim, again due to Tye (1995: 30):

> In turning one's mind inward to attend to the experience, one seems to end up concentrating on what is outside again, on external features or properties.

We must be careful about what is being claimed by defenders of transparency. The point is not that one cannot *think about* or *reflect on* one's current experience. Nor is it that introspection doesn't reveal *any* properties of experiences. After all, surely one can come

[25] The transparency claim originates in Moore (1903), but has more recently become the object of much debate in the wake of Tye's (1995, 2000) work, who deploys it as an argument for strong intentionalism, the view that phenomenal character is identical with representational content of some kind. See Martin (2002), Pautz (2007, §5), and Molyneux (2009) for critical discussion.

to know by introspection that experiences *seem* to relate subjects to properties in the external world (whatever one may think about the truth of this), or that experiences can be more or less vivid (whatever one's preferred account of this may be). The point is rather that introspection does not reveal any *intrinsic* properties of experiences. Whatever the properties of which we are directly aware in undergoing experiences and which ground phenomenal character, they aren't properties of experiences, but rather properties represented by experiences.[26]

If this is right – and it surely seems plausible – then I cannot come to know by introspection that I'm experiencing an object as moving *at a moment*, because none of the properties of which I'm directly aware in undergoing the experience of motion could provide me with such knowledge. The object's motion itself is surely represented as taking time, not as occurring within a moment. The only thing that could be represented as occurring within a moment is my experience of motion; but given transparency no such property of experience can be revealed by introspection.

So, once again we have to conclude that no reason has been given to believe that the presumption of realism about the perception of temporally extended properties leads into a puzzle. It is simply not true that one experiences motion as occurring at a moment, nor

[26] See also Tye (2000: 45ff).

is it even *prima facie* plausible to assume that one does. What, then, is the problem of temporal experience?

2.3. Presentational Concurrence and Its Discontents

Suppose you see an apple fall from a tree. There are two events involved in this: The "worldly" event of the falling, and the mental event of your experience of the falling. What is the relationship between these two events? *When* exactly do you experience the falling?

Naïvely, one might think that both events occur roughly at the same time and run concurrently to one another.[27] The corresponding principle, the *Principle of Presentational Concurrence* (or PPC), was first formulated by Izchak Miller (1984: 107) in his influential book on Husserl's theory of time consciousness:

> The duration of a content being presented is concurrent with the duration of the act of presenting it. That is, the time interval occupied by a content which is before the mind is the very same time interval which is occupied by the act of presenting that very content before the mind.

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[27] The experience really happens very briefly after the external event, depending on the distance of the objects involved and given the fact that there is a short delay after an event has impinged on sense organs before one becomes consciously aware of it (cf. Gray 2004: 7). For our purposes, this delay can be ignored, although it does raise interesting empirical questions, for instance how tennis players ever accomplish to hit fast tennis balls. More on this in chapter 4, §4.

The PPC suggests a view according to which experiences are indeed temporally extended events which represent external temporally extended events in virtue of their concurring with these events.[28] This is often called 'the extensional model' of temporal experience. Proponents of this model claim that it is precisely because experiences are temporally extended and run concurrently to non-simultaneous events that they represent these events and their sensible temporal properties.

This model has been deemed unsatisfactory by many writers; and the main reason for this is that it leads to oddities when one asks the question *when* exactly one experiences an apple falling, at what precise point in time the falling is experienced.

Perhaps the puzzle can best be appreciated by contrasting the perception of temporal properties with that of spatial properties such as distances. I can see two object as being at a certain distance from each other only if I simultaneously perceive both objects. By contrast, in the case of temporal relations there does not seem to be any point in time at which I perceive both relata. Whenever one is perceived, the other one isn't, or so it seems if we assume the extensional model based on the PPC.

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[28] Obviously, presentational concurrence does not provide a general explanation of perceptual representation, of what precisely makes it the case that one extended event perceptually represents another extended event. Theories of temporal experience are theories about what needs to be added to such a general theory for perceptual experience to account for the representation of temporal properties.

While this is not exactly incoherent, it certainly seems odd, because it amounts to the view that there are some sensible relations which have a distinct phenomenal character but which are only perceived when one of their relata is not. Indeed, some writers have gone further and claimed that if we assume the extensional model based on the PPC without making any further assumptions, the resulting stream of consciousness is compatible with the absence of any sensible temporally extended relations, and for the very same reason: it seems possible to successively perceive the relata without becoming perceptually aware of the relation at all. Hence William James' (1890: 628-29) chestnut:

> A succession of feelings, in and of itself, is not a feeling of succession. And since, to our successive feelings, a feeling of their own succession is added, that must be treated as an additional fact requiring its own special elucidation.

But is James right about this? If he is, what must be added to successions of experiences to account for experiences of succession? And if he isn't, what sense should we make of experiencing relations with non-simultaneous relata? Different theories of temporal experience provide different answers to these questions; and thus I think that it is this family of issues surrounding the sufficiency of the simple extensional model which is the core of the problem of temporal experience.

3. The Theories

So, what are the available options? First of all, we can distinguish between diachronic perceptual realism and anti-realism. Anti-realists deny that we directly perceive any temporally extended properties and relations. Their reasons and motivations differ. Daniel Dennett, the best-known proponent of anti-realism, is standardly interpreted as denying the existence of phenomenal experiences across the board, which if true would make any debate about temporal experiences in particular redundant.[29] I shall not criticize Dennett's arguments here, partly because this has already been extensively done,[30] partly because, to modify a remark of Jerry Fodor's, concerning myself with a view that not only seems to throw the baby out with the bathwater, but the bath, the house, and larger parts of Lower Manhattan along the way, seems an idle task.

However, more recently Philippe Chuard (2011) has defended a more palatable *anti-realist atomism*. His view is that while there are perceptual experiences, they only represent non-temporal properties. In the following chapter, I discuss and criticize Chuard's view as well as its close relative, *realist atomism*, which is the view that we do experience temporal properties and relations, but that we do so in virtue of being successively related to contents, each of which only involves non-temporal properties.

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[29] See Dennett (1991: 115ff) and Dennett and Kinsbourne (1992).
[30] See Tye (1993) and Philipps (2009, ch. 2).

Besides atomist views, which either attempt to eliminate experiences of temporal properties or to reduce them to the successive representation of non-temporal properties, one can distinguish another family of views, which claims that while experiences themselves may be instantaneous, they can nevertheless represent temporally extended properties and relations between non-simultaneous events. The stream of consciousness consists of a continuum of such momentary experiences whose extended contents may overlap. See figure 1 for illustration: the upper arrow represents events in the stream of consciousness, the lower arrow events in the external world. At t_4, for instance an experience occurs with a content that "reaches back" to t_2.

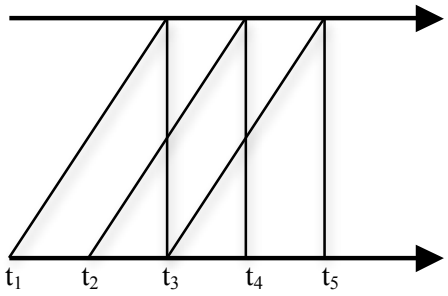

Fig. 1. Retentionalism

One proponent of this model is Michael Tye (2003: 88). He writes:

> [T]he experience of *A* followed by *B* is backward-looking. That is, it occurs with the experience of *B*, all in one go, but it represents the temporally extended period of *A*'s preceding *B*.

This family of views is often dubbed 'content extensionalism', because of the characteristic claim that some experiences have irreducible temporally extended contents;[31] but to avoid confusion I will discuss it under the label 'retentionalism', which is appropriate since the experience retains *A* while *B* occurs. This might seem misleading to those who associate the label 'retentionalism' with the views of Brentano and Husserl, since many who accept temporally extended contents reject these views.[32] However, Brentano's and Husserl's accounts can also be viewed as particular versions of retentionalism that make further (and perhaps implausible) assumptions about the nature of the temporally extended contents, namely that they consist of what Husserl calls momentary "primal impressions" (i.e., perceptual representations of present, momentary properties, depicted in figure 2 at t_4) and a continuum of successively fading "retentions" (i.e., special sorts of perceptual memory states which retain past primal impressions).[33]

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[31] 'Irreducible' because not reducible to successions of contents involving only non-temporal properties. As I want to use these labels, atomist realism and content extensionalism are mutually exclusive.

[32] See for instance Tye (2003: 88).

[33] For a good overview of Brentano's views see Chisholm (1981). Husserl's views are contained in a series of lectures he held over almost three decades and were continuously developing. See Husserl (1905/1964, 1893-1917/1991) and Miller (1984). Although Husserl spends a fair amount of time criticizing Brentano, their views on time consciousness can be counted as identical for my purposes, since I will focus my criticism on the motivating principle common to all retentionalist

But, as far as retentionalism in our sense is concerned, these commitments are entirely optional.[34]

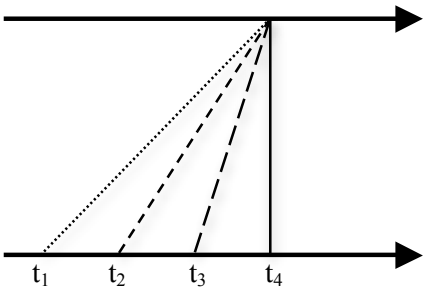

Fig. 2. Husserlian Retentionalism

What motivates retentional models is the idea that any perceptual representation of a relation must involve a *simultaneous* representation of both relata, whether or not the relation occurs at a time or only within a temporally extended interval. If one experiences a succession, one necessarily experiences it at some time. This assumption is often called the 'principle of simultaneous awareness' (or 'PSA'):[35]

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accounts (see below). A further interesting feature of Husserl's theory is that he also postulates forward-looking protensions, a distinctive kind of perceptual expectation, as a further component of full-fledged experiences.

[34] The *locus classicus* for a retentionalist, "backward-looking" account that rejects the Husserlian picture is Broad (1923, 1938). See also Tye (2003: 86-92).

[35] As with the PPC, the PSA was first mentioned by Miller (1984: 109) in connection with Husserl's theory. For different formulations see also Dainton (2006: 133, 2010: §3), Tye (2003: 90), Phillips (2010: 179), and Chuard (2011: 6).

PRINCIPLE OF SIMULTANEOUS AWARENESS

An experience *e* represents some temporal relation *T* between *x* and *y* only if *e* simultaneously represents *x*, *y*, and *T*.

Note that, although the principle states that both relata have to be represented simultaneously, it does not follow from this that they have to be represented *as* occurring simultaneously; and indeed retentionalists would want to deny this. Rather, the claim is that in the case of temporal relations, the relata are simultaneously represented, but as occurring successively.

Finally, the third family of views involves the claim that not only contents are temporally extended, but experiences themselves are, and that furthermore there is an explanatory relationship between the temporal extension of experiences and its representing temporally extended events: we experience temporally extended events in virtue of the temporal extension of experiences themselves.[36] Call this family of views 'extended experience models' or simply 'extensionalism.'[37]

Adherence to the PPC and the claim of explanatory dependence are sufficient for a view to count as a species of extensionalism. However, most proponents of extensionalism

[36] Of course, this explanatory dependence needs to be explained. See chapter 3.
[37] Recent proponents include Dainton (2006, 2008b), Foster (1982), and Phillips (2009, 2010).

don't rest content with this, but add further claims to respond to various challenges that it seems to face.

Tye (2003), for instance, while arguing for the view that whole streams of consciousness that we undergo during periods of wakefulness are just one extended experience, also accepts the PSA and claims that what we represent at each moment during this experience extends somewhat in the past. He thus avoids the question of how one could represent a relation without simultaneously representing both relata, as well as explaining James' distinction between successions of experience and experiences of succession in terms of distinctions in the contents represented at any given moment during an extended experience.

Dainton (2006, 2008b), on the other hand, rejects the PSA and instead combines the extended experience model with the claim that there are multiple experiences within a stream of consciousness, each of which has itself a certain short duration (that of the "specious present"); and that the temporal parts of such experiences are "experienced together" in a special way, since related to one another by a special diachronic co-consciousness relation. According to Dainton, the stream of consciousness thus consists

of extended "pulses" or "phases" of experience which share temporal parts (see figure 3 below).[38]

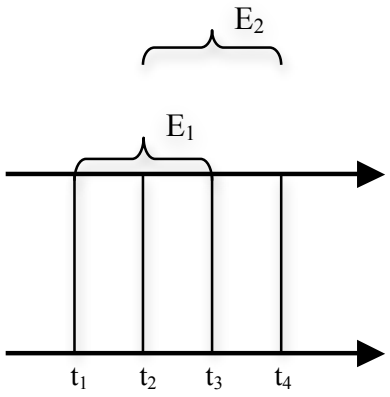

Figure 3. Dainton's Extensionalism

In summary, then, we can distinguish three models of realist views about temporal experience: atomistic models, retentional models, and extensional models.[39] The point of contention between atomism and the other two models concerns the question of whether or not the contents of experiences can involve temporal properties at all.[40] The point of contention between retentionalists and extensionalists is whether or not experiences themselves are necessarily temporally extended.

[38] The sharing of temporal parts in Dainton's extensionalism and the overlap of extended contents in retentionalism are to account for the apparent "smooth" gapless continuity of perceptual experience over long periods of time.
[39] My way of dividing logical space follows that of Dainton (2010) in its broad outline, although I diverge from him by classifying Broad's content extensionalism with retentionalist models.
[40] In a way, realist atomism can be seen as a variety of extensionalism that is committed to a further strong claim about the contents of experience.

4. The Specious Present

How do these models relate to the wide-spread assumption, made popular by James in his *Principles of Psychology* (1890), that we experience whatever we do within a specious present, which he characterizes as "the original paragon and prototype of all conceived times …, the short duration of which we are immediately and incessantly sensible" (ibid.: 631)?[41] To see this, let us look at how this common notion is actually introduced into the literature. James (ibid.: 609-10) further characterizes it as follows:

> [T]he practically cognized present is no knife-edge, but a saddle-back, with a certain breadth of its own on which we sit perched, and from which we look in two directions in time. The unit of composition of our perception of time is a *duration*, with a bow and a stern, as it were – a rearward- and a forward-looking end. [...] We do not first feel one end and then feel the other after it, and from the perception of the succession infer an interval of time between, but we seem to feel the interval of time as a whole, with its two ends embedded in it.

[41] James did not coin the phrase 'specious present', but quotes from the work "The Alternative" by an author called 'E.R. Clay', which is a pseudonym for E. Robert Kelly, an Irish immigrant to the U.S. who built a successful cigar company, retired early and acquired an interest in philosophy. For historical details of this case as well as other precursors to James, see Andersen & Grush (2009).

Sean Kelly interprets this passage as amounting to the claim that "we are at every moment in direct perceptual contact not only with what is now occurring but also with what has recently occurred and indeed with what is about to occur as well" (2005a: 230); which suggests that he thinks of the specious present in retentionalist terms, as I conceive of the lay of the land. However, he also pits what he calls 'the specious present theory' against *Husserlian* retentionalism, which according to him involves the denial of a *direct* perceptual contact with the past and future, since Husserl explains this in terms of a continuum of retentions and protentions.

I think that this amounts to a rather skewed conception both of the specious present and of what the available views are. First of all, nothing in James' characterization *commits* him to a retentionalist picture, since the claims quoted above, e.g. that we are *immediately* sensible of a duration, or that we feel the interval of time *as a whole*, do not entail that we do so *at a moment*. James' remarks on the specious present, in the passage quoted above and elsewhere, are entirely compatible with extensionalist views, which Kelly does not consider.

Secondly, Husserl's particular version of retentionalism should not be understood as a denial of a direct perceptual experience of the past and future, since Husserl does not think that we only directly perceive the objects of primal impressions, but rather that primal impressions, retentions, and protentions are components of whole perceptual

experiences of what he calls the "living present," and which together constitute what one might call the "direct" object of perception.

Lastly, James' saddle-back metaphor and his remarks on the perception of time as involving a forward-looking end should not be read as the (implausible) claim that we are directly perceptually aware of future occurrences. James does not intend to make any particular claims about future-directed components in experience at all; and even Husserl's protentions should not be understood simply as the future-directed counterparts of retentions, since retentions are (roughly) fading visual memories in which the primal impressions of the (very recent) past are *retained*, while protentions are phenomenal expectations of sorts.[42]

Thus I find myself in agreement with Dainton's (2008a, 2010) claim that extensionalist as well as retentionalist models amount to different competing conceptions of the specious present. I would even go further and claim that realist atomism is compatible with the existence of the specious present as well; because in a way the atomist may agree that we are immediately and incessantly sensible of a short duration. He will only add that we are in virtue of undergoing a succession of experiences, each of which represents only non-temporal, momentary properties.

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[42] For a detailed analysis of Husserl's protentions and retentions, see Miller (1984: 128ff). For more on future-directed components of perceptual contents, see my discussion of Grush in chapter 4, §3.

In this sense, James' specious present assumption is equivalent to realism about the experience of temporally extended properties. However, it has also often been interpreted in a more narrow sense, as involving the claim that the stream of consciousness is composed of a succession of separate, overlapping, temporally extended experiences (Dainton) or contents of experience (Husserl, Broad, Tye). In this sense, the existence of the specious present precludes atomistic composition claims. According to these views, there are particular "temporal windows" to the world, which either have or represent a determinate temporal extension, and the stream of consciousness can be explained in terms of either the successive instantiation or representation of such overlapping "windows".[43] It should be emphasized, however, that these additional claims follow neither from James' characterization of the specious present nor from the intuitive distinction between an abstract Augustinian metaphysical present and the perceived present in which the notion originates. Rather, they incorporate further assumptions about the structure of the stream of consciousness, assumptions which are by no means trivial or uncontestable, as I shall demonstrate in due course.

5. Preview

In the remainder of this essay, I articulate and defend a species of the extensional model which I call 'simple extensionalism'. This view combines the claim that over periods of

[43] Cf. figures 1 and 3 above for illustration.

time during which one is awake, one undergoes just *one single* temporally extended experience, with further claims about the ontological structure of the stream of consciousness. In particular, I defend the view that perceptual experiences are not mental *states*, but rather mental *occurrences*. I believe that in combination and given the proper metaphysical underpinnings, this simple extensionalist view of consciousness is sufficient to provide a satisfactory explanation of temporal experience. Neither successions of atomic contents, nor the PSA and the retentionalist views based on it, nor Dainton's claims about overlapping unified "phases" of consciousness are needed.

My plan is as follows. In chapter 2 I discuss and critique atomistic models of experience. I argue that while atomism has often been misunderstood and dismissed too quickly, it ultimately fails due to the fact that the atomic contents which atomists postulate do not fulfill certain conditions for being contents of experiences. In chapter 3 I lay out simple extensionalism by way of a discussion of the differences between the view that experiences are mental states and the view that experiences are mental occurrences, and critique both Tye's and Dainton's views. Finally, in chapter 4 I show that, given the availability of the view that experiences are occurrences rather than states, the PSA is unjustified. I then discuss other motivations for adopting retentionalism and find them all wanting.

Chapter 2: Atomism and the Contents of Experience

1. Introduction

Diachronic perceptual atomism (hereafter 'atomism') is the view that perceptual experience represents only non-temporal properties and events; "snapshots" of the world. Thus, according to the atomist, the visual experience of a moving car is nothing but a successive instantiation of visual contents in which the car is represented as occupying different positions at different times; the auditory experience of a melody is nothing but a successive instantiation of auditory contents in which short sound-segments are represented (more on this in §3 below); and the stream of consciousness, that seemingly continuous flow of conscious experience that we undergo during periods of wakefulness, is composed of the successive instantiation of temporally atomic contents and can be reductively explained in terms of such a succession.

These claims can be understood as expressing either the view that temporal experiences do not exist (anti-realist atomism), or the view that they are nothing "over and above" the successive instantiation of atomic contents (realist atomism).[1] In either case, atomism involves a claim about the nature of the contents of experience:

[1] This reflects the familiar ambiguity in claims of the form "*x* is nothing but *y*" between eliminativism/anti-realism and realist reductivism.

CONTENT-ATOMISM

Necessarily, the contents of perceptual experience are temporally atomic contents.

While anti-realists will add to this the further claim that *all* experiences are relations to atomic contents, the realist's reductive claim entails:

SUFFICIENCY

Successions of atomic contents that fulfill certain further conditions are sufficient for experiences of succession.[2]

Traditionally, atomism of either variety has not been a very popular view. Indeed, many philosophers think that it is obviously false and that the main debate about time consciousness takes place between extensional and retentional models, which are conceived as the two different ways of going beyond a "naïve" atomistic conception of the stream of consciousness.[3]

This anti-atomist sentiment can be traced back to William James' slogan that "a succession of feelings, in and of itself, is not a feeling of succession" (1890: 628).

[2] Obviously, not just any succession of atomic contents suffices for an experience of succession. Further conditions need to obtain. For instance, each content in the succession has to be related to the same subject, and the succession has to be a succession of adjacent contents of experiences, with no noticeable temporal gap between them. More on this in §4.

[3] With Dainton (2008a, 2010), this attitude has reached encyclopedic status.

Following James, critics of atomism typically concentrate on Sufficiency and argue that while there may or may not be atomic contents of experience, something more than their successive instantiation is needed to get to experiences of succession.

In this chapter I argue that while atomism indeed fails, the reason for this is not Sufficiency but Content-Atomism. The problem is not that successions of atomic contents are insufficient for the representation of succession in experience, but rather that streams of consciousness are not composed of successive instantiations of atomic contents in the first place.

One corollary of this view is that while atomism is false, it is by no means *obviously* false. As a matter of fact, I will show that the Jamesian arguments typically launched against it fall short, and that the best argument turns on more subtle questions about whether or not the atomic contents postulated by the atomist fulfill the conditions for being contents of experience. Followers of James have not given atomism a run for its money; and the lesson they typically take away from its failure is the wrong one. It is not that something further is needed to account for experiences of succession, but that the stream of consciousness does not decompose in the way the atomist supposes. If there are no contents of the alleged kind, there is also no need to find ways to "put them back together" to get temporal experiences, as it were.

My plan is as follows. In §2 and §3 I explain atomism in some more detail. In §2 I argue that, contrary to how the view is typically spelt out, it is more plausible in its realist form; and in §3 I explain what an atomic content is. In §4 I discuss some objections against Sufficiency and explain why they are inadequate. In §5 I criticize some reasons one might have for accepting Content-Atomism. In §6 I then present my own argument against Content-Atomism. Throughout the chapter, I will extensively refer to Chuard's (2011) defense of atomism, because I think that, although anti-realist in persuasion, his is the clearest articulation of the view as well as one of its strongest defenses.[4]

2. Realist and Anti-Realist Atomism

It is a manifest phenomenological datum that we see things move and hear melodies, and that when we do there is something it is like for us to see the motion and hear the succession of sounds. This gives us at least a *prima facie* reason to believe that there are perceptual experiences that do in fact represent movement and succession just as immediately and directly as they represent colors and shapes. Since the anti-realist atomist wants to deny this, he has to provide an alternative explanation for the relevant datum.

[4] Other proponents include Dennett (1991), Crick & Koch (2003), and Le Poidevin (2007), but each of them has additional commitments which are neither necessary for atomism nor add to its plausibility.

What could such an explanation look like? Some claim that while we have some sort of *indirect* perceptual access to these properties, they do not belong to those of which we can be *directly* aware in experience. Then they spell out this distinction in terms of a distinction between what is represented in purely sensory experience on the one hand, and in associated cognitive states that are in some way dependent on sensory experience on the other. As Chuard (2011: 8) puts it: "if we're aware of temporal relations, such awareness isn't a purely sensory affair but must depend on other types of mental states."

How is this dependence to be understood? Chuard takes Dretske's familiar examples of displaced perception as a model (cf. Dretske 1995: 41-42): Alex indirectly sees *that* his car's tank is empty by directly seeing the position of the indicator on the gauge; but he doesn't directly see the tank or its emptiness. Analogously, according to the anti-realist, while we see *that* the car is moving by successively representing its positions, we do not directly see the movement. Just as Hume can be interpreted as arguing that we don't perceive causal relations, because all we really perceive are successions of events, on the basis of which we come to believe or judge that one was caused by the other, so too the anti-realist argues that we don't perceive temporal relations, because all we really perceive are successions of events, on the basis of which we come to believe or judge that one follows the other.[5]

[5] See Chuard (2011: 8).

However, this by itself will not do, because the model of displaced perception does nothing to explain the phenomenological datum with which we started. When I see that the tank is empty by directly seeing the gas gauge, the content of the resultant cognitive state (*that the tank is empty*) does not determine any additional visual phenomenology. What it is like for me visually is wholly determined by the content of the perceptual experience of the gauge.[6] By contrast, in the case of temporal experience, there is additional visual phenomenology, that of *motion*, which is not determined by any single one of the atomic contents on which it depends. And this suggests that there is an additional corresponding visual experience with a temporally extended content, not merely the sort of cognitive state involved in cases of displaced perception.

There are two responses available to the anti-realist. He could maintain that the resulting cognitive content (e.g. *that the car is moving*) does determine the visual phenomenology of motion, or he could deny the assumption that the relevant phenomenology is determined by any content. But neither of these responses is particularly convincing.

As for the first, the anti-realist would not only have to maintain that the cognitive content determines the visual phenomenology of motion, but also deny that it does by way of determining a corresponding content of experience, since he rejects the existence of such contents. But cognitive influence on visual phenomenology is typically explained in

[6] This is not to say that displaced perception does not go hand in hand with any additional phenomenology. Perhaps the cognitive content determines additional cognitive phenomenology.

terms of cognitive states exerting influence on (i.e., partly determining) the content of visual experience, not in terms of cognitive states having themselves visual phenomenology, which is hardly coherent.[7]

The second option, that there is phenomenology of motion but no corresponding content, may seem more appealing. After all, isn't it the atomist's contention that phenomenology of motion just is the result of the subject's undergoing a succession of atomic contents, and that while no single such content determines this phenomenology, "all of them together" do? Since the succession is sufficient for determining the phenomenal character of motion, no further content needs to be postulated, or so one might think. Or, in any event, since according to the realist alternative, successions of atomic contents also determine the phenomenology of motion, but do so in virtue of composing a temporally extended content, the question becomes whether there is a substantive difference between the two views.

At this point it may be useful to point out that 'content of experience' is a technical term, not part of ordinary language, so we cannot decide this issue until we explain what we mean by 'content of experience.'[8]

[7] Witness for instance Susanna Siegel's explanation of cognitive penetrability (Siegel 2012: 205-6): "If visual experience is cognitively penetrable, then it is nomologically possible for two subjects (or for one subject in different counterfactual circumstances, or at different times) to have visual experiences with different contents while seeing and attending to the same distal stimuli under the same external conditions, as a result of differences in other cognitive (including affective) states."

One popular way of understanding what it means to say that experiences have content is that they have accuracy conditions or conditions of satisfaction, such that the experience is veridical if and only if the world satisfies the condition.[9] If we understand the term in this way, we have good reason to suppose that every phenomenal character has a corresponding content, because phenomenology places constraints on the world that can be satisfied or not, which is to say that phenomenal character determines a condition of satisfaction.[10] Consider a visual experience in which it seems to you as if there is a red, round, and bulgy object at a certain distance from you. Any experience which is phenomenally identical to this experience will be an experience which is accurate only if there is a red, round, bulgy object there. Likewise, suppose that I'm undergoing a succession of mental states that makes it the case that it phenomenally seems to me as if there is an object moving from *a* to *b*. Since this phenomenology, too, places a constraint on the world, there is a corresponding condition that is accurate if and only if there is an object moving from *a* to *b*. And this is what we call the content of an experience.

Another way of understanding what it means to say that experiences have contents appeals to ways things appear (sound, look, etc.) to the subject. For instance, according to Byrne (2001: 201), the content of experience "specifies the way the world appears or

[8] The importance of this insight for debates about the contents of experience in general has first been demonstrated by Pautz (2009: 484).
[9] See e.g. Chalmers (2006: 50) and Siegel (2006a: 361).
[10] See Siewert (1998) and Chalmers (2006).

seems to the subject."[11] Thus each time a subject is in a state or undergoes an event that makes it the case that there is such a way things phenomenally appear, then that state or event has a content. It follows that, on this view, given the manifest phenomenological data, there are experiences with contents representing motion, just as the realist supposes.

There is a further, purely dialectical reason why we should accept realism as the default view until we have good reason to reject it. According to intentionalist theories of phenomenal consciousness, phenomenal character either supervenes on, or is identical with, representational content that fulfills certain further conditions.[12] There is an ever growing literature committed to the discussion of alleged counterexamples: cases of mental events with phenomenal character but no intentional content, or cases where there is a change of phenomenal character without a corresponding change in intentional content. If anti-realist atomism were true, temporal phenomenology would be one such case, since there is phenomenal character of motion without there being *one* corresponding content.[13] But intuitively, this is not the sort of case the critic of intentionalism is after. Atomism in and of itself is not inimical to intentionalism. After all, it is quite compatible with the view that the phenomenal character of an experience

[11] Not every use of "appear words" picks out the relevant "ways" that specify contents, according to the view. Proponents typically appeal to Chisholm's (1957) and Jackson's (1977) distinctions between epistemic ("It looks as if the neighbors are away."), comparative ("This statue looks like a cow.") and non-comparative/phenomenal ("This looks blue to me.") uses. Only the latter pick out phenomenal contents.

[12] Depending on whether one wants to defend weak or strong intentionalism. See e.g. Pautz (2009: 494) and Tye (2009: 112) for discussion.

[13] According to anti-realism, temporal phenomenology supervenes on successions of contents of experience, but this is not sufficient for intentionalism.

can be fully accounted for by it's subject standing in relations to representational contents, that phenomenology is nothing "over and above" representational content; and it has no initial independent attachment to anti-intentionalist views, for instance qualia views that posit irreducible phenomenal properties of experiences. It would thus be dialectically advantageous if the default version of atomism under discussion was compatible with intentionalism.

We thus arrive at the conclusion that atomism is best understood as a reductive realism about the stream of consciousness. Atomists can acknowledge that we experience motion, successions of sounds, and other sensory temporal properties over temporal intervals. There are temporal experiences that represent temporally extended properties and relations; and they are to be analyzed in terms of successive instantiations of atomic contents. The key question to which the theory provides a response is not: "Can temporal properties be represented in perceptual experience?" Of course they can. It rather is: "How can experiences have contents that are temporally extended?" Atomism provides a simple answer to this question, and therein lies its appeal.

There is also an initial oddity to the view, since it identifies temporal experiences with successive instantiations of atomic contents, which are contents of experiences in their own right. But does this not amount to the view that there are experiences which are collections of experiences? And if it does, how can this be? If we take experiences to be certain kinds of events, we may well come to wonder how this could be possible. After

all, a collection of weddings is not itself a wedding, a collection of movies not itself a movie. Correlatively, parts of weddings are not themselves weddings, and parts of movies not themselves movies.[14] Why should it be different for experiences?

There are two ways of responding to this worry. First, one may point out that not all events are the same in this regard. Just as we can distinguish between individuals and *stuff* that is homogeneous down to certain dimensions (e.g. if *x* is some water and *y* is some water, then the sum of *x* and *y* is also some water; if *x* is cheese, then any good-sized part of *x* is also cheese), so too some events are homogeneous down to certain instants: A succession of walks can be a walk, a series of dances a dance. According to the atomist, then, experiences are homogeneous events down to atomic experiences. Secondly, and more fundamentally, it is important to point out that the move from "*x* is an instantiation of an atomic content in the stream of consciousness" to "*x* is an experience" is fallacious, since atomism in its present form is perfectly compatible with extensionalism, the view that experiences themselves are temporally extended and thus comprise many instantiations of atomic contents. For all that's been said so far, atomism is even compatible with simple extensionalism, the view that there is only one experience per stream of consciousness.[15]

[14] See Tye (2003, 99), who uses the movie analogy to illustrate the view that there is only one experience per stream of consciousness.
[15] For a more detailed treatment of these issues, see chapter 3, §3.

3. Atomic Contents

What are temporally atomic contents of experiences? Sometimes it is claimed, in particular by critics of atomism, that they are contents of experience that involve only strictly momentary events or their sensory properties.[16] If this were the case, and if one accepted an Augustinian conception of time, according to which moments have no duration, it would follow that each stream of consciousness is composed of an infinite number of atomic contents, a conclusion which some may find hard to believe, even if they accept that temporal intervals have an infinite number of moments.[17]

A more significant problem for the existence of momentary contents concerns audition. Presumably, auditory experiences represent sounds or periods of silence, and sounds and periods of silence are essentially temporally extended. Thus, momentary auditory contents are impossible; and a theory that analyzes the stream of consciousness in terms of successions of such contents would have some difficulty explaining how we ever hear anything at all.[18]

[16] See for instance Dainton (2008a, 2010a) and Phillips (2011). Here and elsewhere, I leave it open whether particular events or only their sensory properties can be constituents of contents.
[17] It is not clear to me what exactly the *special* problem for infinite contents of experiences is supposed to be, apart from an expression of incredulity. Perhaps the objector assumes that for each numerically distinct content, the subject of the experience has to be able to distinguish it from other contents in the succession, or that she has to be able to come to how many contents she has just instantiated. But the atomist is not committed to any such implausible claims.
[18] See Pritchard (1950: 47) and Phillips (2011: 17).

Therefore atomists should not accept the view that the atomic contents of experience must be momentary, but admit instead that they can have a short duration, at least in the auditory case. The claim is then that successive instantiations of contents each of which involves only very short events can serve as a reduction base for experiences of temporal relations between non-simultaneous events, as long as the atomic contents are short enough not to represent non-simultaneous events themselves.

The possible duration of the events represented in atomic contents is thus an empirical matter, and can be different for different possible conscious subjects and even for different sensory modalities. When it comes to humans, we have experimental evidence that suggests that each sensory modality has a *coincidence threshold*: if two stimuli occur within an interval below this threshold, subjects are unable to tell that the stimuli are non-simultaneous, which suggests that they experience them as occurring simultaneously.[19] The durations of contents of atomic experiences will have to be below this threshold if representation of non-simultaneity within the same content is to be excluded.

[19] The precise length of the coincidence threshold depends on the sensory modality: 2-3 msecs for auditory stimuli, approx. 10 msecs for tactile stimuli, and approx. 20 msec. for visual stimuli. There is also an order threshold: when two stimuli occur within an interval below this threshold, subjects are unable to tell in which order the stimuli occurred. Interestingly, the duration of the order threshold (approx. 30 msecs) is stable across sense modalities, which has led to the assumption that the perception of temporal order is connected to a central processing mechanism. See Pöppel (1988) and Ruhnau (1995) for discussion of the experimental results, and Dainton (2000/2006: 170), Le Poidevin (2007: 79-80, 128), and Chuard (2011: 9) for discussion of their philosophical significance.

In summary, then, realist atomism is the view that streams of consciousness are necessarily composed of successions of instantiations of atomic contents, i.e. experiences that represent only properties below the coincidence threshold; and some successions of such instantiations are identical with an experience of succession. It is this latter claim which critics of Sufficiency wish to deny. In what follows, I will analyze and criticize one such argument, and then recall a general reason why arguments against Sufficiency do not succeed.

4. Successions of Experiences and the Experience of Succession

Arguments against Sufficiency attempt to establish that the existence of successions of atomic contents of the kind which, according to the atomist, is identical with experiences of succession is in fact compatible with the absence of experiences of succession. Dainton, for instance, argues against what he calls 'the Moving Beam model' as follows:

> By hypothesis, your consciousness consists of nothing but a series of *entirely distinct* point-like apprehensions of point-like contents. These momentary experiences may be so densely packed that there is no temporal gap between them (…). But this manner of packaging does not alter the key fact that the constituents of this experience-filled period of time are instantaneous tone-phases, each of which is experienced in complete isolation (…). It has long been recognized that a succession of experiences is one thing, and an experience *of* succession is quite

> another (…). The Moving Beam model is oblivious to this distinction, and that is why it fails. The moving ray of awareness generates a succession of experiences, but nothing more. (Dainton 2008a: 623)

Dainton presupposes a succession of momentary contents here, but presumably he would be just as dismissive of densely packed successions of very short atomic contents (as characterized in the last section). According to him, the crucial point is that these contents are "experienced in complete isolation", which is supposed to be insufficient for an experience of succession. But what does this phrase mean? The following remark from the paragraph preceding the one just quoted may bring some clarification:

> It would change everything if some of these contents were *apprehended together*, as parts of a (temporally) extended content that is apprehended *as* temporally extended. But in the context of the Moving Beam model the required synthesis or combination is entirely lacking. (Ibid.)

The contrast between contents "experienced in isolation" and "apprehended together" as parts of an extended content is suggestive, but does it suffice to show that there is in fact an explanatory gap between successions of atomic contents and the experience of succession? After all, as we have seen, the realist atomist claims precisely that some contents, successively apprehended, just are identical to a temporally extended content

and thus not "experienced in isolation" in the relevant sense. What, then, does Dainton's contrast amount to?

Here is my attempt at a charitable interpretation: Take a typical experience of succession, for instance the experience of an apple falling to the ground, and one atomic experience e_1 within the succession which, according to the atomist, is identical with the experience of the falling. Suppose that e_1 represents the apple at a certain position between the tree and the ground.[20] It is possible to undergo e_1 without representing a succession, for instance if one just opens ones eyes for a very brief instance or if the apple is only very briefly illuminated during a period of otherwise total darkness. And the same goes for all other atomic experiences in the succession. Taken in isolation, none of them amounts to an experience of succession. It might be tempting to conclude from this that even if we take them in succession, the experience *of* succession does not follow, because according to the atomist, at *every* moment during the interval the subject undergoes only one single atomic experience ("in isolation") that does not represent succession. So, there is no moment during the interval at which one could experience a succession.

This way of reasoning is, however, fallacious, because it assumes that the question of whether at some time *t* there is an experience that represents succession can be settled

[20] Suppose here, for the sake of exposition, that instantiations of atomic contents are experiences. As mentioned before, this is not a trivial assumption, since atomism is compatible with the one-experience hypothesis.

only with reference to facts concerning *t*, i.e. without reference to facts concerning the temporal context of *t*.

To see what I mean, consider an analogy: Suppose that I'm walking to the store during a certain temporal interval. Pick some time *t* during this interval and consider my physical state at that moment. Suppose for instance that at *t* I'm just about to lift my right leg. This lifting, taken in isolation, does not amount to a walking and is indeed compatible with my not walking. That is to say, it is possible that this same physical state occurs in a context where I'm merely lifting my leg but do not walk. And the same goes for my physical state at every other moment during the interval. However, it would be fallacious to conclude that I'm not actually walking at *t*. One should rather conclude that the question of whether or not I'm walking at *t* cannot be settled only with reference to facts concerning *t*. One needs to take facts about the temporal context of *t* into consideration.[21] Likewise in the case of experiences of succession, or so the atomist should claim.[22]

So far, it seems that atomism can successfully meet the challenge against Sufficiency. It would be preferable, however, if we could state a general reason to accept Sufficiency and thereby put the ball squarely back in the court of the anti-atomist. Since Chuard

[21] There are also spatial analogies. One nice example is due to Barry Taylor (1985: 70): whether a certain volume is a volume of fruitcake cannot be settled independently of its spatial surroundings if the volume is small enough. Suppose, for instance, it contains only a single sultana. This does not constitute a lump of fruitcake in and of itself. However, it does within certain larger spatial surroundings.

[22] Of course, these same analogies also make a case for the one-experience hypothesis, as we will see in chapter 3. Here I only use them to defend the atomist against Dainton's objection.

(2011: 14-16) provides just such a reason in his defense of atomism, I can remain brief here.

Chuard proceeds from the claim that if temporal experiences don't supervene upon successions of instantiations of atomic contents, then there must be some property *F* (or set thereof) that temporal experiences instantiate but mere successions of atomic contents lack. But it turns out that such a property is very hard to find. The anti-atomist can of course simply try to introduce one. This is what Dainton (2000/2006; 2008b) does by claiming that successive temporal parts of genuine experiences of succession must be "phenomenally bound" by the relation of diachronic co-consciousness. But a relation cannot simply be stipulated into existence. It needs to earn its keep by explanatory value, especially if it is supposed to be primitive and *sui generis*, as Dainton tirelessly claims.[23] Chuard then argues that if a succession of atomic contents fulfills certain further conditions, experiences of succession simply seem to follow. The relation of co-consciousness, as well as other further properties or relations which might be postulated in its place, are thus explanatorily idle and ought to be eliminated. Chuard (2011: 17) gives the following conditions:

> (a) the successive combination of the *phenomenal character* of each single experience in the succession, (b) the *temporal relations* – distance, order,

[23] See Dainton (2000/2006: 84, 105, 216-17, 236; 2008b; 2010b: 134). I will give a more general criticism of Dainton's view in the next chapter.

succession – between such experiences, (c) the *degree of overlap* between the representational contents of adjacent temporal parts in the succession, together with (d) various *limitations* – cognitive, mnemonic, introspective.

To get an experience of smooth continuous motion, for instance, the temporal intervals between adjacent contents must be short enough not to be detected. There must also be a great degree of overlap between the contents, e.g. the positions of the moving object cannot be too different from atom to atom. The degree of representational overlap, as well as various cognitive and introspective limitations account for the fact that, from the point of view of the subject, the differences in the contents of adjacent experiences cannot be readily detected as discrete, with the result that one just seems to "flow into" the other.

I concur with Chuard that once these conditions are in place, it is hard to see how there could still remain an explanatory gap between the succession of atomic contents and the experience of succession. It is not even clear that we could *conceive* of a situation in which atomic contents meeting conditions (a)-(c) are instantiated without there being an experience of succession. If so, this is a serious problem for the critic of Sufficiency, since for there to be an explanatory gap between some *A*-facts and some *B*-facts, there has to be a conceivable scenario in which the *A*-facts obtain while the *B*-facts are absent or vary. But no such scenario seems to be available here.[24]

[24] I owe this point to Brian Cutter.

Critics of atomism seem to have underestimated the resources available to the view. Moreover, if it is admitted that the stream of consciousness is composed of successive instantiations of atomic contents, atomism seems to be a rather attractive theory, since it proposes a simple structure of the stream of consciousness, free of any irreducible *sui generis* relations or retentional contents.[25] So, in what follows, I will examine the case for temporally atomic contents further.

5. The Case for Atomic Contents

What might be the reasons for accepting Content-Atomism? Once again, the clearest statement on the matter can be found in Chuard's work, so I will concentrate on it.

Chuard attempts to derive the claim that atomic temporal parts of extended experiences are themselves experiences from certain criteria we ("philosophers and the folk") rely on "when identifying and distinguishing perceptual experiences" (Chuard 2011: 12). The first criterion he mentions is the individuation of experiences by their representational content, which he formulates as follows:

> *The content principle*
>
> If experience e_1's representational content $\neq$ e_2's representational content, then $e_1 \neq e_2$.

[25] Recall the options listed in chapter 1, §3.

By the content principle, he argues, temporal parts of temporally extended experiences are distinct experiences. To illustrate this, he uses the example of a temporal experience *E* of an apple falling from a tree, which he describes as follows (ibid.):

> The temporal part of *E* at t_1 (call it $e@t_1$) represents the apple at the top of the tree, whilst its temporal part at t_2 ($e@t_2$) represents it as between the treetop and the ground, and that at t_3 ($e@t_3$) represents it as reaching the ground. Since each temporal part represents the apple at a different location, they have different contents. Given the content principle, $e@t_1$, $e@t_2$, and $e@t_3$ are distinct tokens of different types.

However, this simply begs the question against the opponent of atomic experiences, because the content principle is merely a sufficient condition for establishing that two experiences are distinct. It does nothing to decide the question of whether some mental event or temporal part of an experience is itself an experience in the first place.

The example is quite telling here. Chuard simply classifies the temporal parts of a temporally extended experience in a way that suggests that they are experiences ("call it $e@t_1$", etc.) and then by the content principle arrives at the conclusion that they are "distinct tokens of different types." But the question was whether they are experiences in the first place. Perhaps $e@t_1$, $e@t_2$, and $e@t_3$ are not experiences, but rather some other mental state or event, or only temporal parts of a full- fledged experience. The content

principle does not provide an argument against these alternatives. It merely states that if two mental states or events are experiences, then if they have different representational contents, they are distinct types of experiences.

Another principle, which according to Chuard (ibid.) delivers the same result, is the following:

> *The modal principle*
>
> If it is possible to have experience e_1 without having experience e_2 (or vice versa), than $e_1 \neq e_2$.

Chuard alleges that, since any temporal part of *E* could occur without the others, for instance $e@t_2$ (the representation of the apple as between the treetop and the ground) without $e@t_1$ and $e@t_3$, they are distinct experiences. However, once again, the principle only provides us with a sufficient condition for differentiating types of experience, not with a reason for believing that a temporal part of an experience must be an experience. The opponent of atomism can happily admit that *E* has temporal parts, and even that these *types* of parts could occur in different streams of consciousness without change of their intrinsic properties, while denying at the same time that they are experiences. Nothing that Chuard says here should compel us to think otherwise.

Perhaps it should be noted that these points are not to be taken simply as an *ad hominem* critique of an idiosyncratic and ultimately question-begging argument. On the contrary, I think that Chuard's arguments can be taken as exemplary expressions of the principle reasons behind Content-Atomism, which on the face of it appear to be quite persuasive, so much so that even critics of atomism typically share them.[26]

The reason corresponding to the content principle is that one undergoes temporally extended experiences by way of subsequently undergoing its temporal parts, each of which have their own distinctive representational content and are therefore themselves independent experiences. And the reason corresponding to the modal principle is that it is possible that these temporal parts are experienced by themselves or in the context of different streams of consciousness while retaining their intrinsic phenomenal character, and that they are therefore themselves experiences.

In what follows, I will argue that, despite its prima facie plausibility, Content-Atomism fails, because the relevant atomic temporal parts of temporally extended experiences should not be thought of as instantiations of contents of experiences themselves. And a large part of the argument will be concerned with undermining the reasons just outlined, as we will see.

[26] Including Dainton, who writes: "what are total experiences (or any experiential wholes) if not sums of parts that are themselves experiences?" (Dainton 2000/2006: 188).

6. Against Content-Atomism

Arguments against Content-Atomism are rare, but not entirely absent in the literature. One such argument has been put forward by Michael Tye (2003: 30), who draws on an analogy with material objects:

> A large chunk of clay is used to make a statue at time *t*. The clay constitutes the statue without being identical with it. Suppose counterfactually that at time *t'*, where *t'* is later than *t*, an artist cleverly removes much of the clay without remolding it so as to leave behind a small clay pot. In the counterfactual situation, the clay that remains constitutes a pot at *t'*. But in the actual situation it does not. In actual fact, no clay is removed. There is, in actual fact, no tiny pot within the statue. There is only the statue.

According to Tye, extended experiences are, in this respect, like statues (cf. ibid: 40): just as counterfactual situations involving the chunk of clay do nothing to show that in the actual world it constitutes a "pot within the statue", so too counterfactual situations involving temporal parts of experiences do nothing to show that they are actually independent experiences.

The argument by analogy is not decisive, however, because according to mereological universalism (the thesis that, for any set *S* of objects, there is an object that the members

of *S* compose), there is a sense in which in actual fact there is a tiny pot within the statue, since there are as many objects as there are sets of disjoint objects composing the statue, among them the object composed of the set of objects constituting the pot.[27] Likewise, the atomist may reply that temporal parts of extended experiences are themselves experiences, or independent instantiations of atomic contents. Of course, unlike in the case of the statue, not every set of such instantiations will be such that members of the set compose an experience, because not merely sets but successions, i.e. temporally structured sets, are necessary for a temporal experience. However, in other ways, the atomist may claim, the atomic content instantiations are like the smallest objects of the mereological universalist: independent experiences of themselves, as well as parts of larger, temporal experiences.

But, even though the argument is not decisive, its central thesis is worth pursuing further, which is that even if we grant that a temporal part of an actual extended experience could, in a counterfactual situation, count as an experience in its own right, this does not show that it is actually an experience, since when embedded in the temporal context of the actual stream of consciousness, it may fail to fulfill necessary conditions for being an experience that in other situations it does fulfill. In what follows, I shall argue just that.

[27] Mereological universalism is, of course, not universally accepted, but it is widespread enough to cast the argument from analogy into serious doubt. For an overview of the terrain, see Korman (2011).

6.1. Upstream and Downstream Conditions

What are the conditions that a mental event has to fulfill in order to count as an instantiation of a content of *experience*? This is not a trivial question, not the least because the term 'experience' is used in philosophy in a quasi-technical sense that is distinct from its ordinary usage.[28] Technical terms have to be defined or at least sufficiently introduced; and we must be careful to use the term as it is used in the relevant literature and not to stipulate away any controversial issues.

The following introduction is, I think, adequate for these purposes: Suppose Anna perceives a red triangle, Bert hallucinates a red triangle, and Joan is subject to an illusion, where faced with a white triangle under unusual lighting conditions, she seems to perceive a red triangle. Suppose further that what it is like visually is the same for all three of them. All three then have the same visual experience. At first pass, visual experiences are mental events which essentially have a (visual) phenomenal character and are neutral with respect to veridicality.[29]

We can then distinguish between two kinds of conditions for being the content of an experience: those which one might call 'upstream conditions', which concern the

[28] See Byrne (2009), who ends up arguing against the existence of experience qua mental events. I discuss this issue in some detail in chapter 3.

[29] This sort of stipulation is not intended to preempt the debate between disjunctivists and common factor theorists about the nature of experience, since it is not part of the stipulation that all three species of experience are of the same natural kind. It is open to disjunctivists to give a disjunctive analysis of experience, as it is open to common factor theorists to give non-disjunctive analyses, for instance in terms of relations to representational contents or sense data.

relationship between the representational event and the external world, and downstream conditions, which concern the event's role in the subject's cognitive life.

An example of an upstream condition is the *matching condition*: If a subject undergoes an experience as of φ (e.g. a red triangle in front of her), then she undergoes a mental event that matches the world only if φ is present.[30]

An example of a downstream condition is the *grounding condition*: If a believer undergoes an experience as of φ, then she thereby has the capacity to form a (non-inferential) belief about φ. Even if she doesn't have any background knowledge about the object she is experiencing, she can plausibly still form certain *de re* propositional attitudes about it, for instance wonder "What is that?" with respect to the object.[31]

The grounding condition is controversial, especially when it comes to experiences involving particular objects. Suppose that I'm looking at the foliage of a tree directly ahead of me, and that there is a perfectly camouflaged bird right in the center of it which I do not notice.[32] Does my visual experience represent the bird in this case? The proponent of the grounding condition will deny this, because in this situation I do not have the capacity to form any beliefs or other *de re* propositional attitudes about the bird. However, suppose that the green bird is right in front of me, blended into the green

[30] For this and the following, see Pautz (2010: 335).
[31] See Siegel (2006c) and Tye (2009: 12).
[32] This case is due to Siegel (2006c).

foliage, and covers a bright yellow post-it note. I do not see the note because the bird covers it. Does it not then follow that I see the bird? Again, the proponent of the grounding condition will deny this, because he will deny the underlying principle that if *a* blocks me from experiencing *b*, I must have an experience of *a* – think of earplugs, or drugs causing blindness. The controversy gets quite subtle at this point, but in the end I think that the grounding condition is very plausible, not only as a condition of experiencing particular objects, but also as a condition for experiencing properties. If a mental event does not enable me to form any beliefs or other propositional attitudes about a sensory quality *Q* (redness or triangularity, for instance), then this mental event is not an experience that represents *Q*.

6.2. Introducing the Argument

My argument against Content-Atomism runs as follows: In some cases, the atomic temporal parts of the stream of consciousness which according to atomism are instantiations of contents of experience do not fulfill the grounding condition and thus aren't such instantiations. Moreover, in the cases in question, the smallest temporal parts that do fulfill the grounding condition represent temporal properties and thus cannot count as instantiations of temporally atomic contents. It follows that, contrary to Content-Atomism, streams of consciousness are not necessarily composed of successions of instantiations of atomic contents.

Some explanations are in order. First, to get clear about the dialectical situation, recall that atomism essentially involves the reductive claim that experiences representing successions *necessarily* involve successions of atomic contents. Correlatively it also involves a claim about the *nature* of the stream of consciousness, namely that it is a long succession of relations to, or instantiations of, atomic contents. So, for a refutation of the view one only needs to argue that *some* streams of consciousness aren't thus composed, that there are some experiences of succession that do not involve successions of atomic contents. One does not need to argue that atomic contents of experience are impossible, nor that there are no streams of consciousness that are thus composed.[33]

Second, I intend to use the expression 'atomic temporal parts of the stream of consciousness' as a neutral way of referring to those mental events which, according to the atomist, are relations to, or instantiations of, atomic contents. However, in order to avoid begging the question for or against atomism, it is necessary to give a more substantial characterization of the temporal parts in question. On one way of understanding the term, the argument is trivially true, since the smallest temporal parts of streams of consciousness are arguably sub-personal representations, many of which have to be co-instantiated to produce a phenomenally conscious mental event. This is of course

[33] Since it is my considered view that only entire streams of consciousness are (full-fledged) experiences (see chapters 3 and 4), I believe that instances of atomic experiences, in which subjects are related to one atomic content only, are exceedingly rare, and perhaps even nomologically impossible. But they seem to be metaphysically possible, since it is conceivable that there are streams of consciousness with the duration of just one atomic experience. Of course, the present argument does not commit one to any particular view about the ontology of experience and is thus compatible with the claim that *many* streams of consciousness are, in fact, successive instantiations of atomic contents.

not the kind of atom that should be the target of our argument. On the other hand, we also shouldn't understand it as meaning 'atomic temporal parts which are phenomenally conscious', because this would make the argument trivially false, because it is an analytic truth that phenomenally conscious mental events are experiences, or relations to contents of experience.

How then should we characterize the target temporal atomic parts? Intuitively, unlike a single sub-personal representation, they *contribute* to the overall phenomenal character of the extended experience, but without thereby necessarily having a "settled" or "complete" phenomenal character itself. To get at the intended sense of 'contribution', let us draw an analogy to spatial perception and introduce the notion of a spatial phenomenal pixel, as follows:

> For every experience *e, x* is a spatial phenomenal pixel of *e iff x* is the smallest discernible spatial part of the external event represented in *e*.

To illustrate the intended sense of "spatial parthood", suppose you are looking at a large uniformly red canvas, perhaps reminiscent of the upper part of Mark Rothko's famous *No. 14*. Pick a particular spot on the canvas, which is large enough to be just barely visually discernible (i.e., had it been smaller, it wouldn't be visually discernible at all and thus wouldn't be a discernible part of the content of your experience). Had this spot been yellow instead of red, the phenomenal character of your overall visual experience would

have been different. It would have been an experience as of a large red canvas with a tiny yellow dot. The actual red spot is thus a spatial phenomenal pixel of your experience.

Analogously, we can introduce the notion of a temporal phenomenal frame:

> For experience *e, x* is a temporal phenomenal frame of *e iff x* is the smallest discernible temporal part of the external event represented in *e*.

To illustrate this, consider the experience as of a dog running across the lawn. Had the dog miraculously vanished and reappeared for a brief temporal period just long enough to be discernible, the phenomenal character of your experience of this temporally extended event would have been different. It would have been a very strange experience as of a "temporally choppy" running dog with a "gap". The actual temporal part of the running dog is thus a temporal phenomenal frame of your experience.

These notions provide precisely the characterization of "temporal atomic part" that is needed in our argument. Opponents of atomism maintain that spatially and temporally extended experiences represent certain sums of phenomenal pixels and frames, which constitute their phenomenal character, but deny that each phenomenal pixel or frame corresponds to a separate content of an experience in its own right. Atomists, on the other hand, are committed to this claim, because with experiences of continuous succession, for instance of smooth, continuous motion or of a sound that continuously rises in pitch,

every *discernible* temporal part of the represented event will be phenomenally different from the preceding one. By the atomist's lights, there thus has to be a corresponding atomic content.

Correspondingly, the crucial premise of my argument is: some temporal phenomenal frames do not correspond to atomic contents of experiences, because they don't fulfill the grounding condition: subjects who undergo experiences that represent the events involving such a frame are not thereby enabled to form a non-inferential belief or any other propositional attitude about that frame. Since I believe that the corresponding claim is true about spatial phenomenal pixels as well, I will start by making a case for the spatial analogue, which will serve me as a useful parallel.

6.3. Spatial Phenomenal Pixels

I will illustrate my case against spatially atomic contents with an example due to Fred Dretske (2007). Suppose you are looking at two brick walls, each of which has some bricks missing, one after the other, at a close distance and for a period long enough to peruse each of them closely. You first see a wall, and when you look again, you see another wall that is slightly different from the first in that it has one extra brick (which Dretske calls 'Sam'). However, you don't notice any difference between the two walls. Even after going back and forth between the first and the second several times, the scene in front of you looks exactly the same. The question is, then, whether you see each

individual brick in each wall, and whether you see Sam in particular. Dretske argues that the answer to both questions has to be 'yes', while Tye (2009: 176ff) denies this.

The details of this controversy need not concern us here, because it is effectively a debate about whether or not the grounding condition holds. If Dretske is correct, then in the situation described you see Sam despite of the fact that you do not notice him and thus in this situation can't form any non-inferential beliefs about him. Dretske thus has to deny the grounding condition. If we uphold this condition, we are left with the result that you are not conscious of Sam, despite the fact that he is part of a plurality of bricks of which you are conscious.

The point of this should now become clear. Sam behaves in crucial respects like a spatial phenomenal pixel (the only difference being that he is much larger): If he had been different, the content of your visual experience would have been different, and you would have been aware of him. For instance, if Sam had been blue, your overall experience would have been of a brick wall with one single blue brick, in which case you would have noticed him, been able to form beliefs about him, and thus you'd have undergone a perceptual experience of him. But, in actual fact, you do not. There are thus spatial phenomenal pixels which do not correspond to spatially atomic contents of experiences. They aren't represented "separately" but only as parts of larger spatial wholes.

6.4. Temporal Phenomenal Frames

I submit that precisely the same holds *mutatis mutandis* in the temporal case. While sitting in my study and looking out the window, I see a large tree branch with hundreds of leaves swaying in a breeze. My visual experience enables me to form beliefs about the branch, the plurality of leaves, some individual leaves, as well as the swaying. However, it does not enable me to form beliefs or other *de re* propositional attitudes about each position the branch is in during this period. Take one such position that the branch occupies at some point in time within the temporal interval during which I experience the swaying. If at that point the branch and its leaves had miraculously, for the briefest distinguishable duration below the coincidence threshold, turned neon-green, I would have noticed its position during that period, been able to form beliefs about it, and thus I would have undergone a perceptual experience of it, or at least insofar as the grounding condition is concerned. But, in actual fact, I cannot, or at least not for *every* frame that is a temporal part of the event represented in my actual experience. And that is all that's needed, for there are then temporal phenomenal frames that do not correspond to atomic contents of experiences.

We obtain the same result by reflecting on the experience of continuous sounds. Suppose, for instance, you listen to a fast upwards chromatic scale being played on the piano with use of the sustaining pedal, the result of which is that each note seamlessly "flows into" the next without any noticeable interruption. It is plausible that the sonic experience you undergo during this period enables you to form beliefs about the sound of the scale and

some parts of it, but not that it enables you to form a belief about the sound of each note that is being played during this period. Of course, if one of the sounds had been markedly different from its sonic context, for instance if there had been the briefest distinguishable loud screech in the middle of the period, you would have noticed it, been able to form non-inferential beliefs about it, and thus undergone a perceptual experience that represented it. But in actual fact, you cannot, at least not for *every* single frame of your sonic experience.[34] Again we arrive at the conclusion that there are temporal phenomenal frames which do not correspond to atomic contents of experiences.

If what I have been arguing here is correct, we can conclude, first, that if the grounding condition is in fact a necessary condition for some content to count as a content of experience, then some phenomenal frames aren't separately represented in experience.[35] Moreover, in the relevant cases – experiences of smooth, continuous succession – the smallest temporal parts which do fulfill the grounding condition represent temporal properties and relations like motion or successions of sounds. It follows that temporal experiences cannot be reductively explained in terms of successive instantiations of atomic contents. Atomism fails, because Content-Atomism does.

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[34] You can, of course, form *some* beliefs about individual sounds on the basis of your experience. If you are a musical savant with perfect pitch, for instance, you might be able to *infer* which sounds you've just heard on the basis of recognizing the pitch of the first or last note of the scale. But that is not sufficient for representing each sound individually, since the grounding condition requires the ability to form *non-inferential* beliefs independently of any background knowledge.

[35] The atomist may, of course, turn my *modus ponens* into a *modus tollens* and reject the grounding condition, which would render the present argument ineffective. Indeed I think that the best way to defend atomism would be to allow only upstream conditions on the contents of experience, because these are fulfilled by temporally extended experiences and their atomic temporal parts alike.

Chapter 3: Experience Without Experiences

1. Introduction

Much of our discussion so far has involved the seemingly innocuous assumption that there are such things as perceptual experiences. For instance, atomism has been characterized as the view that temporal experiences are successive instantiations of atomic contents, extensionalism involves the claim that experiences are temporally extended, and retentionalism the claim that, although representing temporally extended properties and events, experiences themselves are momentary.

However, if there are such things as experiences, what sorts of entities are they? At first glance, the most plausible view seems to be that they are psychological events of some sort, which correspond to phrases such as 'seeing a car drive by' or 'hearing a violin'. On this picture, just as the world contains explosions, weddings, and horse races, it also contains particular episodes of visual awareness like seeing a car drive by, auditory awareness like hearing the sound of a violin, and so on. Taken at face value, this suggests that experiences occur or happen, and that they are extended in time, with a beginning

and an end. For instance, the visual experience of the car driving by takes time just as the perceived episode itself does, presumably the same amount of time.[1]

It also entails the following assumption:

> PARTICULARITY
>
> During periods of unbroken conscious wakefulness, subjects undergo many particular and wholly separate perceptual experiences.

In this chapter I argue that this assumption is false. In the course of my discussion, I lay out the view that we're undergoing only one extended experience per stream of consciousness,[2] explicate its underlying ontological assumptions, and discuss some of its upshots for a theory of time consciousness.

My plan is as follows. In §2 I review Alex Byrne's (2009) arguments against the existence of particular experiences and introduce his alternative, the view that perception

[1] That is to say, if I perceive an event *e* with duration *d* for the entirety of its duration, then my perceptual experience of *e* lasts *d*. This is the PPC (see chapter 1, §2.3), which I take to be an (optional) part of this picture. One has to be careful not to confuse this principle with other claims about the perception *of* duration. For instance, it is compatible with the PPC that an event can *seem* to last longer or shorter than it actually does, that in life-threatening circumstances time can seem to "slow down", etc. These phenomena may call into question certain claims about how duration is represented in experience (see Philipps (2013) for an illuminating discussion), but not the PPC, which is a claim about the relationship between actual external durations and the duration of the mental vehicle representing them.

[2] This is a variation of the 'one experience hypothesis' first defended by Tye (2003), but with some notable differences, as we'll see in §6.

can be understood in terms of subjects being in certain kinds of *states*. In §3 I clarify the distinction between the main ontological categories in play here: events, states, and processes. In §4 I show how this distinction can serve to clarify the issues concerning the ontology of perception and temporal experience. In §5 I then explain and illustrate my preferred version of the one experience hypothesis. In §6 I present an objection against the one experience hypothesis and argue that this objection is best deflected by adopting the view that experiences are relational processes. Finally, in §7 I criticize a well-known theory of temporal experience that endorses the particularity assumption, Barry Dainton's extensional specious present theory.

2. Skepticism About Experiences

Particularity is a shared assumption of a wide variety of writers in the philosophy of perception.[3] But it is more often tacitly presupposed than argued for, for instance in formulating the view that perceptual experiences have representational content. Witness the following introductory passage from Peacocke's *Sense and Content* (1983: 5):

> A visual perceptual experience enjoyed by someone sitting at a desk may represent various writing implements and items of furniture as having particular spatial relations to one another and to the experiencer, and as themselves having various qualities.

[3] See, e.g., Searle (1983: 45), Peacocke (1983, ch. 1), Siewert (1998: 11), and Martin (2006: 354).

But why believe that there are such things as visual perceptual experiences in the first place? Is this just obvious? Alex Byrne (2009) has recently argued that it isn't, that, on the contrary, the reasons why many philosophers believe that it is are questionable, and that we can formulate a theory of perception without mentioning particular experiences. In what follows, I review and evaluate Byrne's arguments. My aim is to clarify the underlying assumptions about the ontological character of experience incorporated both in the received view and in his alternative.

Consequently, two questions are in order here. First, what, according to Byrne, might be the reasons why philosophers often take the existence of experiences to be an obvious starting point, and why are these reasons objectionable? Second, what is his alternative model of perceptual representation? Let us take these in turn.

With regard to the first question, we can distinguish an *argument from ordinary language* and an *argument from introspection.*

The argument from ordinary language proceeds from ordinary language data involving the term 'experience' to the conclusion that there are particular experiences that are the referents of these terms. In response to this, Byrne points to a distinction, which goes back to Hinton (1973), between our ordinary notion (or notions) of an 'experience' and a "special philosophical" notion, and he maintains that since making sense of the former

does nothing to imply the existence of particular temporally extended psychological events, we should be skeptical about employments of the latter.

To see what he has in mind, consider the following examples:

1. Getting a root canal was a very unpleasant experience.
2. It is often better to have a single solid experience extending over several quarters than several experiences of one quarter each.[4]
3. I had many strange experiences today.[5]

According to Byrne (and Hinton), uses such as these, which illustrate "the ordinary biographical sense" of 'experience' (Hinton 1973: 7), simply report "what happened to one, what one did, what one encountered or witnessed" (Byrne 2009: 433), for instance that getting a root canal felt unpleasantly.[6] And although the referents of these phrases are events, they are external, worldly events rather than internal psychological events. Some of them may even be represented in perception, but this does not entail the existence of particular temporally extended psychological token events doing the representing.

[4] Taken from a website on undergraduate research opportunities in biomedical engineering.
[5] Taken from Tye (2003: 97).
[6] One might add as an aside that there are also "biographical" uses of 'experience' as a mass term, as in: "Emotions, in my experience, aren't covered in single words." (taken from Jeffrey Eugenides' novel "Middlesex"). In these cases, the term seems to indicate the evidence available to one.

In a similar vein, Tye (2003: 97) responds to the charge that sentences such as (3) provide evidence for the existence of multiple experiences as follows:

> Talk of my undergoing many strange experiences no more requires for its truth that there exist multiple strange experiences than does talk of my having a drowning feeling require that there be a feeling that drowns. Just as in the latter case it suffices that I undergo an experience that *represents* that I am drowning, so too in the former it suffices that my experience today *represented* many strange things.

Of course, Tye does not want to deny the existence of experiences altogether, but merely the existence of multiple experiences within streams of consciousness, while Byrne (2003: 435) insists that the truth of sentences such as (3) does not require the existence of experiences at all, not even of one all-encompassing experience. Perhaps one may want to reply that it does, because if there are things represented *in experience* (a drowning, many strange things, etc.), surely there must be *something* that is doing the representing. However, according to Byrne, the mere requirement of a representational vehicle does not entail the existence of experiences, not even one, as we will see below.

According to the argument from introspection, the existence of particular experiences is revealed to us whenever we introspect what is given to us in phenomenal consciousness and thus simply evident even if not required by our ordinary uses of the term

'experience'. Byrne quotes Lycan (2003: 26) as witness to this claim, who writes that "introspection does represent our experiences as having properties. In particular, it classifies them; it assigns them to kinds."

In response to this, Byrne points out that it is far from clear that introspection represents particular experiences at all, much less that it "classifies them" or "assigns them to kinds", whatever that may mean. Defenders of the transparency claim (introduced in chapter 1, §2.2) will argue that in introspection, there is an important sense in which we neither represent our experiences nor any of their intrinsic properties; rather, when we attempt to introspectively attend to our experience and its intrinsic features, we end up simply attending to features which appear to be instantiated in our environment.

But even without wanting to commit oneself to a strong transparency claim, one might think it odd to suppose that one could simply "read off" the ontological character of the representational vehicle of perception by introspection alone. If there are alternatives to the supposition of particular psychological events doing the representing, surely introspection will be neutral between these views.

This leads us to our second question: What is Byrne's alternative account of perceptual representation?

First, we need to clarify what needs to be accounted for. What is the "special philosophical sense" of 'experience' of which Byrne and Hinton are skeptical? Typically, the term gets employed when philosophers wish to speak about perceptual (or any sort of sensory, phenomenally conscious) representation while remaining neutral about the veridicality of that representation. Suppose *S* first perceives a red round tomato under normal conditions, then undergoes an illusion of a green oval tomato under abnormal conditions, and then hallucinates a red round tomato. Suppose further that under all three conditions, what it is like for *S* visually (her visual phenomenal character) is exactly the same. Then, according to the standard philosophical use of 'experience', *S* undergoes the same (type of) visual perceptual experience in all three cases. Correspondingly, if we wish to obviate commitment to particular experiences, we can say that in all three cases there is an explanatorily salient property which she instantiates. Lets call properties of this kind 'experiential properties.' So, in all three cases, *S* instantiates experiential property *E*.[7]

We can now ask: How is *S's* instantiating *E* to be analyzed? According to the *representational theory of perception* that Byrne endorses, it can be analyzed in terms of *S's* standing in a relation to an intentional content which represents (roughly) that there is a red, round object at a certain distance from her.[8] This representation relation can be understood as a proprietary non-factive propositional attitude relation, analogous to

[7] This way of framing the issue, including the example, is taken from Pautz (2009: 492f).
[8] For different explications of this view, see Dretske (1995), Tye (1995, 2000, 2009), Byrne (2001), and Pautz (2007, 2009), among others.

believing, which Byrne calls 'exing' (meant to suggest "experiencing"). Thus, according to this view, *S* instantiates *E* just in case *S* exes that *p*.[9] The experience is veridical just in case *p* is true and non-veridical just in case it is false.

Many other details would need to be filled in to fully explain and defend this view, but for our purposes it suffices to point out that no reference is being made here to experiences as particular psychological events. Byrne (ibid.: 437) concludes:

> (CV) [the content view, i.e the representational theory of perception, E.G.] is silent on whether to ex that *p* is to undergo an event, or whether it is to be in a state or condition. If to ex that *p* is to be in a state or condition, like believing or knowing, (CV) can be smoothly conjoined with the 'no experience' hypothesis.

Byrne's alternative to the claim that there are experiences thus depends on the distinction between *S's undergoing an event* and *S's being in a state or condition*. Prima facie, both are possible alternatives for a proponent of the representational theory: *S's* exing that *p* could be further analyzed either in terms of her being in a *state* that represents that *p* (call

[9] Byrne does not mean to be original in explaining perception in terms of a sui generis non-factive attitude relation, but merely to repeat a characterization that is already established in the literature, for instance by Johnston (1997), who calls it 'visually entertaining', and Millikan (2000: 111), who calls it 'visaging.'

this 'the state view') or in terms of her undergoing an *event or process* that represents that *p* (call this 'the occurrence view').[10]

For all Byrne has shown, neither introspection nor our ordinary uses of the term 'experience' provide us with reasons to favor one of these views over the other. Nevertheless, he seems to think, first, that there is a significant ontological difference between them, and second, that the state view has the upper hand, since it doesn't commit one to the existence of a particular kind of psychological event. In what follows, I will first argue that, although the first claim is true, the second one is not, before showing that there is room for an occurrence view that does not involve commitment to the particularity assumption. To do this, I first need to clarify the distinctions between the ontological categories in play: states and occurrences, events and processes.[11]

3. States and Occurrences, Events and Processes

As a first pass, we can say that states *obtain* at moments in time and for certain durations, and if they are temporally extended, they obtain continuously throughout the duration of

[10] I use the term 'occurrence' as a generic term that refers to events as well as processes. This way of using the term has been well established in the literature. See, for instance, Mourelatos (1978) and Simons (2000).

[11] In philosophy of mind, the term 'state' is sometimes used as a convenient umbrella term that encompasses states as well as occurrences, especially since many have thought that the ontological character of the representational vehicle of perception doesn't make a difference to any substantive issues. It is only in recent years that some have argued for the relevance of this distinction for debates surrounding the mind-body problem (see Steward 1997) and the distinction between perception and cognition (see Soteriou 2007).

their existence. Occurrences, on the other hand, *unfold* or *happen* in time.[12] States are static, occurrences dynamic. Paradigmatic examples of the former are certain property instantiations such as *being red* or *being triangular*, while paradigmatic examples of the latter are events such as world wars and weddings, as well as processes such as growth and decay.

To make this distinction more precise, distinguish first between two sorts of properties: those that are temporally intrinsic and those that are temporally extrinsic. A property *F* is temporally intrinsic just in case whether an object *o* is *F* at *t* does not constitutively depend on what happens at times other than *t*. It is temporally extrinsic if there is such a constitutive dependence.[13]

This sense of constitutive dependence can be further explicated as follows: Suppose that, in the actual world, *o* has *F* at *t*. If there is some world-time pair <*w**, *t**> such that (i) the state of *w** at *t** is an exact intrinsic duplicate of the state of the actual world at *t*, and (ii)

[12] See Mourelatos (1978), Steward (1997, ch. 3), O'Shaughnessy (2000, ch. 1), and Soteriou (2007; 2011) for further discussion.

[13] Yablo (1992: 262f) briefly alludes to this in the context of his discussion of *categorical* properties, the possession of which "by a thing *x* at a possible world is strictly a matter of *x*'s condition in that world, without regard to how it would or could have been" (as opposed to *hypothetical* properties). In a footnote (ibid.: 263), he draws an analogy between categorical properties and *intrinsic* properties on the one hand, "which a thing possesses wholly in virtue of how it is in itself, irrespective of what goes on around it" (as opposed to extrinsic properties), and those which I call '*temporally intrinsic* properties' on the other, "whose possession by a thing at a time is insensitive to how matters stand at other times" (Yablo calls these 'occurrent properties', which is an unfortunate choice of terminology, since occurrences, in the sense in which I and others use the term, correspond to temporally extrinsic properties). See also Zimmerman (2002), who deploys a similar distinction.

in *w**, *o* (or *o*'s counterpart) does not have *F* at *t**, then *F* is a temporally extrinsic property.

Take for instance the property of *being triangular*. Whether some object instantiates this property at some time *t* does not constitutively depend on what happens at times other than *t*. Vary other times as you wish, if *o* is triangular at *t* and one duplicates the actual state of the world at *t*, one will ipso facto duplicate the fact that *o* (or its counterpart) is triangular.

By contrast, suppose that I am walking at *t*. There are worlds which duplicate the actual state of the world at *t*, yet differ from the actual world in what happens at times before and after *t*, such that in those worlds I am not walking at *t*, but perhaps merely raising my foot, or holding one foot up in the air. So, walking is not a temporally intrinsic property.

The distinction between temporally intrinsic and extrinsic properties does not match the distinction between states and occurrences, since, for instance, *being married* or *being the father of Alex* are temporally extrinsic properties yet intuitively count as states, since they don't pass plausible linguistic tests for occurrences. For instance, one cannot be in the process of being married, or in the process of being a father in the same way as one could be in the process of walking or fishing.[14]

[14] For more on these tests, see Steward (1997, ch. 3). Of course one could be in the process of *fathering*, but this is clearly not equivalent to the state of *being a father*.

However, note that occurrences do correspond to instantiations of temporally extrinsic properties *of a certain kind*, namely where the constitutive dependence in question concerns the times immediately before or after *t* (i.e., the times which constitute the "immediate temporal environment" of *t*). Call those properties 'temporally extrinsic*'.

Correspondingly, then, if I say that *o* is *F* at *t*, this is an *occurrence* attribution just in case *F* is temporally extrinsic* and a state attribution otherwise. So, if *being triangular at t* is a state, whereas *walking at t* is an occurrence.

The same applies *mutatis mutandis* not only to properties, but also to relations: *being two meters away from* is a relational state, while *scanning* is a relational occurrence. Whether an electronic scanner is scanning a page at *t* rather than being stuck constitutively depends on what happens before and after *t*.

Drawing the line between states and occurrences in this way also allows us to make the correct predictions for instantaneous events such as stops, arrivals, or impacts, insofar as these should be conceived of as temporal boundaries (analogous to edges), and thus as dependent upon their temporal environments.[15] Whether or not my being at a certain place at *t* is an arrival will depend on what happened immediately before *t*. Therefore, arrivals are occurrences.

[15] If there were strictly instantaneous property instantiations which aren't such boundaries, these would count as states, according to the proposed test. But I doubt that there are such things.

The idea of a constitutive dependence of what is the case at a time on what is the case within the temporal interval that includes it gives us a "metaphysically robust" distinction between states and occurrences. But how should we distinguish events and processes as different species of occurrence, and how "metaphysically robust" is this distinction?

It is useful here to recall that the metaphysical distinction between states, events and processes, which is a distinction between "ways of being in time", corresponds to a linguistic distinction between different kinds of verb phrases. Vendler (1957), who first introduced these classifications, distinguished between activities, accomplishments, achievements, and states. What interests us here is his way of distinguishing activities like 'run' or 'push a cart' from accomplishments, like 'run a mile' and 'draw a circle.'[16,17] According to Vendler (ibid.: 145):

> If I say that someone is running or pushing a cart, my statement does not imply any assumption as to how long that running or pushing will go on; he might stop the next moment or he might keep running or pushing for half an hour. On the other hand, if I say of a person that he is running a mile or someone else that he is drawing a circle, then I do claim that the first one will keep running till he has

[16] Vendler's states ('know or believe something, love or dominate somebody' (1957: 146)) are verb phrases that refer to states in our sense, while his achievements ('reach the hilltop', 'win the race', 'spot', 'recognize' (ibid.)) refer to momentary events that are temporal boundaries.

[17] Kenny (1963, ch. 8) draws a similar distinction but recognizes only three categories: activities, states, and performances, the latter of which comprises both Vendler's achievements and accomplishments under the same category – which is only fitting, since they both refer to events (see below).

> covered a mile and that the second will keep drawing till he has drawn the circle. If they do not complete their activities, my statement will turn out to be false.

Thus, activities refer to open-ended processes, while accomplishments refer to processes which terminate in an endpoint at which they are completed. If I stop running a mile, I did not run a mile; whereas if I stop running, I did indeed run.

This is one way to draw the distinction between events and processes: Events are processes which possess an *end*. They can thus be said to be "telic occurrences": unlike mere processes, their descriptions incorporate reference to a point of completion.[18]

Another way to draw the same distinction has been proposed by Mourelatos (1978), who was also the first to maintain that Vendler's (and Kenny's) linguistic categories should be understood as being grounded in a more basic ontological distinction between events, states, and processes. According to Mourelatos, the event-process distinction could be understood in analogy to the distinction between particular countable things and amassable stuffs. "A clock is not made up of clocks. Correspondingly, an event *E* is not made up of *E*-events: the capsizing of a boat is not made up of boat-capsizings." (ibid.:

[18] See Rashbrook (2010: 285).

430). On the other hand, just as larger masses of gold are made up of smaller masses of gold, so larger periods of running are made up of smaller periods of running.[19]

These two ways to draw the event-process distinction are not in competition to one another. The picture seems to be the following: By adding a point of completion to a process description, one describes it as a particular event; just as by adding dimensions to amassable stuff, one individuates it. A mass of gold has other masses of gold as proper parts, while a particular golden ring (i.e., a lump of gold of a particular dimension) does not have other golden rings as proper parts. Analogously, while periods of running have other periods of running as proper temporal parts, events of *running a mile* do not have other such events as proper temporal parts.[20]

How "metaphysically robust" is this distinction? Suppose I walk to the grocery store across the street without stopping. First I cross the street, then the sidewalk, then I enter the store. How many occurrences are there? A process of walking, as well as the event of walking to the store? And what about the event of crossing the street? I think the only plausible view is that, *fundamentally*, there is only one occurrence here, which can either be described as an event, in which case it is described from the point of view of its

[19] We can thus call masses and processes homogeneous or "homoeomerous" (literally "like-parted"). Aristotle thought that natural substances like wood, bone, flesh, or gold were homoeomerous "all the way down". But the distinction remains valid even if we recognize that substances, as well as most processes, are only homoeomerous down to certain scales: at the micro-scale, there are parts of gold that aren't gold, just as there are parts of walks that aren't walks.

[20] See Mourelatos (1978), Phillips (2009, ch. 4), and Rashbrook (2010, ch. 7) for further discussion.

completion, or as a process, in which case it is described independently of its point of completion. Temporal parts of the process, such as *crossing the street*, are events, too; but they aren't *separate* events. They are nothing "over and above" the process of which they are parts, just those temporal parts described under some telic aspect.

Thus, for any continuous process, there are as many events within that process as there are possible telic descriptions of temporal parts of the process, however gerrymandered. Events in this sense are abundant. On the other hand, the more "natural" events are simply entire processes themselves, which aren't parts of any further processes of the same kind, described under an aspect of their completion.

4. Temporal Experiences and the Temporal Shape of Experience

Returning to our issue at hand, the question of the analysis of the instantiation of experience properties, two observations are in order. First, there is indeed a significant ontological difference between the state view and the occurrence view. Fundamentally, what's at stake in Byrne's discussion is whether or not experience properties are temporally extrinsic* properties. Second, and contrary to what Byrne seems to suggest, there is no *prima facie* advantage to the state view, since although it eschews commitment to the existence of experiences qua particular psychological events, it does so only by committing to the existence of states as the required mental vehicles of experience – and as far as considerations of parsimony are concerned, these alternatives

are on a par, since there is no categorical difference between the instantiation of those properties which are temporally extrinsic* and those which are not.

So, to which category do experiential properties belong? As one might expect at this point, this question is far from trivial.

On the one hand, paradigmatic propositional attitudes such as beliefs and desires are mental relational states: whether or not *S* believes that *p* at *t* is not constitutively dependent on *t*'s immediate temporal environment. So, for a proponent of the representational theory like Byrne who analyzes experience in terms of a proprietary propositional attitude, the *state view* seems to follow. If experiential properties (as characterized above) are analyzed in terms of propositional attitude relations, they are surely temporally intrinsic, or so one might think.

Some paradigmatic examples of perceptually relevant properties seem to lend support to this view. For instance, *seeing a red round tomato* at *t* appears to be temporally intrinsic, according to our test, and thus a mental state, and the same goes for *hallucinating* or *perceiving*. Whether *S* perceives a tomato at *t* is not constitutively dependent on anything that happens in the immediate temporal environment of *t*, so *perceiving* is a state. Does this not suggest, that the exing relation is temporally intrinsic, as well?

Reflection on temporal experiences shows that things are not quite as simple. Suppose that, from t_1-t_6, *S* sees a car moving. According to the representational theory, at t_3 she stands in the relation of *exing* to *p*, where *p* involves a particular dynamic sensory quality, *movement*. So, the content of the attitude involves a temporally extended occurrence. But if the exing relation itself is a relational state, whether or not it is instantiated at t_3 cannot be constitutively dependent upon t_3's temporal environment. So, even if it *represents* a temporally extended occurrence, the representational *vehicle* must be instantaneous. It follows that the state view is committed to *retentionalism* about temporal experience (as characterized in chapter 1), the view that at particular moments in time, temporally extended properties and relations can be represented "all at once."

Conversely, the occurrence view, that whether *S* experiences a temporally extended occurrence at some time *t* is itself constitutively dependent on a larger interval that includes *t*, corresponds to *extensionalism* about temporal experience, the view that the representational vehicle of perceptual experience is itself temporally extended, and that this extension is a condition of the possibility of representing temporally extended properties and relations.

We thus arrive at a simple correspondence between theories of temporal experience and views about the temporal shape of experience: If extensionalism is true, so is the occurrence view; if retentionalism is true, so is the state view.

Does it follow that the representational theory of perception is committed to retentionalism? Not necessarily, because the conception of experiences as proprietary propositional attitudes does not entail that they are states. A proponent of the representational theory who endorses extensionalism will deny that all propositional attitude relations are temporally intrinsic and maintain instead that to ex that *p* should be analyzed in terms of undergoing a temporally extended occurrence that represents that *p*. On this view, whether or not *S* exes that *p* at some time *t* constitutively depends on what happens before *t*. *Exing* is just like *walking* or *scanning* in these respects.[21]

Extensionalism is thus compatible both with the letter and the spirit of the representational theory, since none of the latter's theoretical ambitions are undermined. It is a unified relational theory of both veridical and nonveridical perception, including illusion, that eschews commitment to sense data. In addition, it is open to the proponent of this view to give a reductive account of phenomenal character in terms of representational content. In fact, short of an independent commitment to retentionalism, there is nothing that should prevent one from embracing both the representational theory and the view that experiences are occurrences. The common way of couching all representations as states seems ontologically naïve.

The dichotomy between state view and occurrence view does not exhaustively specify all possible alternative structures of the stream of consciousness. We can further distinguish

[21] More on this below.

between views according to which there are many particular separate experiences per stream of consciousness, and those according to which there is only one.

In what follows, I illustrate my own preferred option, the combination of extensionalism and the one experience view, according to which experiences are relational processes that encompass whole streams of consciousness (call this 'simple extensionalism'). This view stands in opposition both to retentionalism (which I will discuss in the next chapter) and to versions of extensionalism that endorse *Particularity*.[22] I finish this chapter by presenting a well-known version of such a view, Barry Dainton's conception of the specious present, and show that its commitments lead to problems that my view avoids.

5. The Process of Experience

Consider a simple electronic flatbed scanner that scans a sheet of paper by way of continuously moving its sensor and then digitalizing the information. The scan has a beginning and an end. It begins with the sensor reading the very first part of the upper edge of the sheet, and ends when it ceases to scan its lower end. It also has temporal parts that are themselves temporally extended, for instance the scanning of the first line of text, or the scanning of a larger image at the lower end of the sheet.

[22] In the course of the discussion (in §6) it will also emerge that the combination of the one experience view and the state view is quite implausible.

As mentioned before, scans are relational processes, since, for any time *t*, whether or not the sensor is scanning the sheet at *t* depends on whether it is moving, and thus on what happens in *t*'s temporal environment. They are also *representational* processes: scanners scan something (e.g., lines of texts, images), and supposedly there are conditions under which they can misrepresent their objects; but they do so by way of a continuing process, not a series of states. The scanner is not first in a state that represents the first line of text, then in another one that represents the second, and so on. It follows that scans can have multiple contents at the same time: given its stage within the process at some time *t*, it can simultaneously scan, say, the lower half of the second line of the text and the second line of the text at *t*, just as I can simultaneously walk and raise my foot.

According to simple extensionalism, the same goes, *mutatis mutandis*, for experiences.[23] Throughout uninterrupted periods of consciousness, I undergo one single process of experience that begins at the first moment of wakefulness and lasts until I fall into dreamless sleep. That process has temporal parts that are themselves temporally extended, e.g. visual experiencing a moving car or a tomato. But, importantly, these events are not themselves separate token experiences. They are nothing "over and above" temporal parts of the encompassing experience.

[23] Variations of this kind of occurrence view have been defended by O'Shaughnessy (2000, ch. 1) and Soteriou (2011).

Furthermore, experiences are representational processes: they have contents and are subject to misrepresentation, but they represent their objects by way of a continuing process, not a series of states. This is what separates this view from retentionalism. The continuing experience of a moving car is not analyzed in terms of successions of momentary experiences, each of which represents some period of movement.

As in the case of *scanning*, it also follows from the occurrence character of experience that it is possible for it to have multiple contents at the same time. This may initially seem paradoxical, but is actually verified by the peculiar phenomenal character of temporal experience: If one attends to a moving car for a period of time and asks oneself what one visually perceives at any discernible moment during that period, one will come to the conclusion that one experiences the car as moving, but at least sometimes also its most recent position, which is constantly changing from moment to moment.

It is important not to confuse the thesis that there is represented continuity with the thesis that experience itself is continuous. In general, the continuous character of experience is independent of the representation of continuity. This is pointed out nicely by O'Shaughnessy (2000: 63):

> Even the unchanging perception of a fixed and immobilized world conceals a processive continuity, that of the perceiving itself, which is occurrently renewed in each instant, defining itself through that change as it proceeds.

Thus, according to the present proposal, even if I stare at a blank wall, my staring is a continuous temporal part of a continuous process of visual experience. Absence of represented continuity does not entail the absence of continuity of representation.

On the other hand, the fact that perceptual experience represents continuity does not entail a continuous or occurrent character of the representation, either. There is a lot of confusion about this in the literature. For instance, Soteriou (2011: 490) argues for the thesis that conscious experience is a continuous occurrence by considering the phenomenology of continuous movement (in his case, of the second-hand of a clock). He first points out that the movement itself seems to be continuous, in the sense that "each successive phase of the movement of the second-hand seems to share a temporal part with some prior phase of its perceived movement." This seems to be a valid point, insofar as it means that we don't perceive movement by perceiving discrete, separate and countable episodes of motion. But then he continues (ibid.):

> There's a similar respect in which one's experience of the movement of the second-hand seems to one to be continuous. That is to say, each successive phase of one's awareness of the movement of the second-hand seems to share some temporal part with some prior phase of one's awareness of its movement. It doesn't seem to one as if there are distinct, separate and successive experiential episodes or events to discern … Consideration of this sort of case suggests that when one undergoes a conscious perceptual experience that fills an interval of

> time, each sub-interval of that interval of time is filled by some successive phase of that experience, and each successive phase of the experience shares a temporal part with some prior phase of experience.

The uses of 'seems' in this paragraph suggest that, according to Soteriou, either our experience represents itself as being continuous, or that we can come to know this simply by introspection. In either case, this is highly problematic. First, if we assume that experience is relational and consists in a subject's mental vehicle being related to an external object or intentional content (maintained, respectively, by proponents of direct realism and representationalism), it is implausible to suppose that by (re-)presenting its objects it represents itself, and moreover, that it represents itself as being continuous, or as having phases that share temporal parts.[24] Second, introspection doesn't plausibly reveal facts of this kind either, as we already saw in §2. If introspection doesn't show that there are separate token experiences per stream of consciousness, then it also doesn't show that experiences are continuous. As mentioned before, it is implausible to suppose that one could simply "read off" the ontological character of the representational vehicle by introspection; and it is fallacious to infer it from the continuous character of some objects of experience.[25]

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[24] *Pace* Kriegel (2009), who argues that what makes it the case that a mental state is conscious is that it represents itself in some way. Note that even if one did hold such a view, it would take a further assumption to suppose that experiences represent themselves *as being continuous*.

[25] The oddity of inferring the continuity of experience from introspection becomes even clearer upon realizing that the thesis is contentious in the first place. As we will see in the next chapter, there are various writers who, for a variety of reasons, reject the view that experiences are

Thus, rather than arguing for simple extensionalism from the deliverances of introspection, I suggest that we should argue for it from simplicity and by elimination. As the analogy with *scanning* suggests, the combination of the one-experience view and the occurrence view makes for a rather simple structure of the stream of consciousness. If competing models add complexity without better accounting for the manifest phenomenological data, this is a strike against them. And if they run into serious problems which the present view avoids, we have even better reason to endorse it. This situation obtains if one combines the one experience view with the state view, as I will now show.

6. The One-Experience Model and the Argument from Local Uptake

Tye (2003: 97) also endorses a one-experience model, which he characterizes as the view "that, for each period of consciousness, there is only a single experience – an experience that represents everything experienced within the period of consciousness as a whole"; and his reasons are similar from the ones given above: that it seems to be the simplest hypothesis compatible with what introspection reveals about the contents of experience, and that it would be fallacious to suppose that because experience represents many things, there are many experiences.

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continuous (e.g. Strawson (2009)) or extended (e.g. Grush (2009)). Should we suppose that their introspection is faulty, or that they have radically different experiences from ours?

However, he doesn't fully work out the underlying ontology of the view. What he does say may suggest that he thinks of experiences as events, since he draws an analogy to a long movie that, although depicting many things at different times, remains "just one movie, not many movies unified together into one encompassing movie" (ibid.: 99). At the same time, he claims that experiences are states of a certain kind, which suggests that, like many philosophers of mind, he doesn't distinguish between representational states and events.

In particular, according to Tye's (1995, 2000, 2003) version of the representational theory, experiences are "PANIC states", which is to say, states with a *poised abstract nonconceptual intentional content*. For our purposes, the most important feature of this view is the poisedness condition. For a content to be poised is for it to be available as a direct input into the subject's reasoning system. Poisedness is meant as a downstream condition on phenomenal consciousness: a mental state or event is phenomenally conscious only if it can play a certain role in the subject's cognitive economy.[26]

If one combines this view about the content of experience with the one experience hypothesis, the resulting claim is that over the course of an entire stream of consciousness, subjects are in a single state (or undergo a single event) whose content is poised for direct input into to reasoning system.

[26] See chapter 2, §6.1 for further discussion of such conditions.

This suggests a objection, which I call 'the argument from local uptake'. Tim Bayne (2005: 498) formulates it as follows:

> Is it really plausible to suppose that the contents of an entire stream of consciousness – that is, the period of consciousness between one state of unconsciousness and the next – are poised for direct input into the reasoning system? I had an experience of tasting coffee this morning, and this evening I am currently experiencing a Merlot. … Are these contents conjointly poised for direct input into my reasoning system? That seems *extremely* unlikely.

"Extremely unlikely" is an understatement. Plainly, it just seems obvious that during the later parts of the day, the taste of my breakfast coffee is not directly available anymore as an input to reasoning. It is only available at the time when I taste the coffee.[27] The "uptake" of what is consciously experienced is temporally local. Therefore, if experiences are PANIC states, it follows that there are many experiences per stream of consciousness, as many as there are distinct poised abstract nonconceptual contents.

Tye seems to be aware of this problem, since he tries to circumvent it by distinguishing between overall and momentary phenomenal character. As he puts it (2003: 99):

[27] As Rashbrook (forthcoming, a) points out, it is easily possible that I forget something I distinctly experienced earlier in the day, for instance where I put my key, even if my stream of consciousness remains unbroken throughout. The perceptual experience of the key is thus not poised for direct input into my reasoning system throughout whole periods of consciousness.

> Experiences, on my view, are *maximal* PANIC states. For each such state, there is momentary phenomenal character (what it is like to undergo the experience at a particular moment) and an overall phenomenal character (what it is like to undergo the experience from beginning to end). The phenomenal character of an experience at any given moment is its PANIC at that moment. The overall phenomenal character of an experience is its overall PANIC. It seems to me natural to suppose that experiences have stages; and it also seems plausible to hold that these stages have phenomenal character. But experience stages are not experiences, any more than undetached cloud parts are clouds.

However, this doesn't seem to get to the heart of the matter. The problem is that it remains unexplained in what sense the contents of *maximal* PANIC states are *poised* at all. There is no point in time at which the content corresponding to an entire experience is available to the reasoning system. Rather, availability is entirely restricted to the contents of (either momentary or somewhat extended) experience stages. There just don't appear to be any such things as poised contents of maximal PANIC states.

We should conclude from this that one has to go: either the one experience view or the conception of experiences as PANIC states. I reject the latter. As explained above, it is open to a proponent of the occurrence view to claim that the process of experience has multiple successive contents, which are successively available for further cognitive processing, without the need to integrate them into one overall content that is itself

poised. Since the possibility of successions of contents is distinctive of representational occurrences over and against representational states, the viability of the one experience view depends on the occurrence view.

7. Dainton's Extensionalism and the Specious Present

What if one wants to defend a combination of extensionalism and *Particularity* over and against simple extensionalism? What are the commitments of such a view?

As I formulated it, *Particularity* is the claim that subjects undergo many particular and wholly separate perceptual experiences during streams of consciousness. The emphasis on separateness is important since, as mentioned earlier, the proponent of simple extensionalism can allow that there are many particular events that make up the stream of consciousness, but he will insist that they are identical to temporal parts of the encompassing experience, described under some aspect of completion. The challenge to the defender of *Particularity* is to give an account of why we should suppose that the stream of consciousness consists of perceptual events in a more robust sense. What's needed is a principled way to divide the stream of consciousness into separate "phases."

One well-known theory that attempts to do just that is Barry Dainton's extensionalist specious present theory. According to Dainton, a specious present is a temporally extended experience that lasts for a certain determinate, short period. It is a "total"

experience, which is to say, a fully unified experience that is not a part of any larger experience (see Dainton 2006: 176) and thus *separate* in our sense. Its temporal parts are "diachronically unified", and its contents "experienced together". This "togetherness" is explained by a primitive relation of "diachronic co-consciousness" (ibid.: 168): every temporal part of a specious present is experienced together with every other part in virtue of their standing in the co-consciousness relation, which is hence symmetrical and transitive (ibid.: 172).[28]

To account for the subjective continuity of experience over larger periods of time, Dainton maintains that successive specious presents overlap and share some of their temporal parts.[29] For example, suppose that I listen to a continuous scale of notes *Do-Re-Mi*, which lasts long enough to endure over two specious presents, each of which contains only two notes. According to Dainton, the structure of this part of the auditory stream of consciousness is (*Do-Re*) and (*Re-Mi*), with (*Re*) as a shared part.[30]

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[28] As mentioned in chapter 1 (FN 21), Dainton does not clearly distinguish between experiences and their contents, which is at times very confusing. Since for me this distinction is non-negotiable, I present Dainton's position on its own terms here, but will from now on use the term 'specious present' to refer to the duration of temporally extended contents of Dainton's temporally extended experience-units throughout.

[29] The intended sense of subjective continuity to be accounted for here is *extreme* continuity. Following the Aristotelian tradition, we can say that something is extremely continuous *iff* it doesn't have any manifest boundaries, whereas it is strictly continuous *iff* it doesn't have any gaps. Correspondingly, the stream of consciousness is extremely continuous *iff* its temporal boundaries are not manifest in experience, whereas it is strictly continuous *iff* it doesn't have any gaps. See Rashbrook (forthcoming, b) for discussion. The point is that even if one wants to deny, as e.g. Dennett (1991) or Strawson (2009) do, that consciousness exhibits strict continuity, one still has to account for the manifest phenomenological fact of extreme continuity between specious presents. Dainton's overlap model attempts to do just that.

[30] For illustration, see chapter 1, §3, figure 3.

Dainton's theory of time consciousness is complex and varied, and various parts of it have been discussed and criticized extensively elsewhere.[31] My complaint here is a fundamental one: I reject the existence of specious presents in the sense proposed by Dainton. In what follows I'll have a go in explaining why.

The specious present is a theoretical term introduced by James to serve a certain function, namely to refer to "the short duration of which we are immediately and incessantly sensible" (1890: 631). In a deflationary sense, the existence of such a duration is not particularly contentious, because it is quite plausible to assume that for an event to be directly perceivable, its duration may not exceed a certain upper limit. Take Broad's (1923: 351) famous example of an old-fashioned clock with continuously moving hands as a case in point:

> [T]o see a second-hand *moving* is a quite different thing from "seeing" that an hour-hand *has* moved. In the one case we are concerned with something that happens within a single sensible field; in the other we are concerned with a comparison between the contents of two different sensible fields.

Examples such as these seem to show that when it comes to the possibility of perceiving change, duration matters: the movement of the hour-hand takes place at a rate that is

[31] See, for instance, Bayne (2001: 87f) and Tye (2003: 93) for objections against the overlap model; or Chuard (2011) and Rashbrook (forthcoming, a) for objections against Dainton's conception of co-consciousness.

above the threshold, i.e. there is no perceptually discernible change of position during the specious present, while the movement of the second-hand remains below it.[32]

Dainton, too, seems to adopt such a conception of the specious present when he writes that its length is "the amount of change, as measured by normal clock-time, that we are able to apprehend as a whole" (2011: 393). However, this conception, taken by itself and without any additional assumptions, is entirely compatible with simple extensionalism, as well as every other theory of time consciousness under discussion. An atomist may hold that there is an upper limit to the number of successions of atomic experiences that amount to experiences of succession, while a retentionalist may hold that there is an upper limit to the durations of events represented by every momentary perceptual act. Likewise, the simple extensionalist may claim that there is an upper limit to the duration of events that can be represented by the process of experience throughout its progression.

Thus we may conclude that the existence of the specious present neither entails nor even suggests Dainton's model of separate, overlapping experiences that have the length of the specious present. Rather, this model crucially rests on the further assumption that in order to be perceptually represented in one content, the temporal parts of events have to be "experienced together" in a special way that necessitates the existence of a primitive co-consciousness relation. If the necessity of such a relation could be established, then we

[32] See also Phillips (2011), who uses this conception of the specious present to argue, against Fara (2001), that even though some changes are too small to be perceived, one can still perceive constant motion.

would have a reason to divide the stream of consciousness into separate experiences corresponding to these contents. However, it is precisely this assumption that remains largely unmotivated in Dainton's various works on the matter, and additionally seem to lead into serious problems.

To see what's at issue here, let's look at one of Dainton's own examples (2011: 395). Suppose you are watching a ball roll down a gentle slope for a few seconds. This period of your visual stream of consciousness can be divided into separate phases, each of which "contains as much perceived change as you are able to apprehend at once" (ibid.) and thus constitutes a single specious present, whose "contents are dynamic: in this case, they represent a *ball in motion*" (ibid.: 396). About diachronic co-consciousness he only remarks (ibid.):

> [A]lthough the successive phases [temporal parts? E.G.] of this specious present are experienced as occurring *in* succession – you see the ball move from one place to another – you also experience them together, as part of a temporally extended whole: the contents are thus *diachronically co-conscious*.

The conjunction of these two salient features of co-conscious events, being experienced as occurring in succession and being experienced together, raises a problem that Dainton discusses on several occasions (2006b, 2010, 2011). He calls it 'the extensional simultaneity problem.' Here is one formulation (2011: 293f):

> The contents of a single specious present are supposed to *seem present*; they are also supposed to have some apparent temporal depth: the contents are not compressed into a single instant, they are (seemingly) spread through a brief interval. Since one part of this interval will be experienced as occurring before the other, how can both parts also seem present? If both parts seem present, won't they be experienced as simultaneous?

Le Poidevin (2007:87) puts it as follows:

> If we have a single experience of two items as being present, then, surely, we experience them as *simultaneous*. Suppose we are aware of A as preceding B, and of B as present. Can we be aware of A as anything other than past?

Dainton's (2006b: 371; 2011: 396) solution to the problem appeals to a distinction between two senses of 'present.' He claims that, although two temporal parts of a co-conscious event are not present in the sense of 'occurring at the same instant', they are nevertheless present in a phenomenal sense. Dainton characterizes this "phenomenal presence" as follows (2006b: 371):

> Contents that are experienced 'as present' in the relevant sense … possess the immediacy and vivacity that are characteristic of all phenomenal properties as and

> when they occur. A pain sensation has phenomenal presence while it is actually being experienced; if at some future time it is remembered then this phenomenal presence is lacking – though of course memory-images have their own distinctive (but different and less vivid) phenomenal presence. … Given this, to suppose that the successive phases of a single specious present can all possess phenomenal presence is not in the least puzzling or problematic either.

However, this response misses precisely the most distinctive phenomenal feature of temporally extended sensible qualities: that they are (phenomenally) present as a whole in virtue of the fact that some of their parts (viz., the earlier ones) possess *less* phenomenal immediacy and vivacity than the others. I vividly and immediately experience the *rolling* of the ball precisely in virtue of the fact that I perceive the position it occupies at this very moment *more vividly* than earlier ones. So, when it comes to experienced movement and other temporally dynamic sensible qualities, we should maintain not only that their temporal parts do not occur in the same instant, but also that they don't have the same phenomenal presence.

I think we can see from this that the problem lies precisely in Dainton's departure from the deflationary understanding of the specious present as the upper limit of the duration within which we can perceive change to the further assumption that the temporal parts of a perceived event within this duration have to be co-conscious. This is an attempt to

provide a static model for an essentially dynamic phenomenon, for even within the specious present, there is a phenomenological counterpart of the arrow of time.

Without this assumption, Dainton's reason to postulate particular separate overlapping experiences vanishes. We are left with our original model, that there is one extended process of experience, which in its progression relates its subject to various temporally extended contents.

Moreover, contrary to what Dainton's model implies, there is also no reason to think that every temporally extended content has to have the length of the specious present. On the deflationary understanding, the specious present is a condition of the possibility to perceive a sensible event: its duration may not *exceed* a certain threshold. But this does not entail that every perceptual content has the length of that threshold. On the contrary, it seems implausible to suppose that the perceptual system represents even-timed quanta, just as it is implausible to suppose that it represents even spatial quanta. It is designed to detect edges – spatial ones as well as temporal ones. Within the limits of the specious present, its temporal extension is given by what is represented: the falling of a glass, the rolling of a ball, or the swishing of a rocket.

8. Summary

If what I've argued here is correct, we arrive at the following conditional: If extensionalism is true, then simple extensionalism is and hence the particularity assumption false. In other words, if experiences are occurrences, then we only undergo one of them per stream of consciousness.

I took a long route to arrive at this conclusion. First I considered Byrne's objections to the claim that there are such things as particular experiences. This discussion showed that, contrary to what Byrne argues, the state view and occurrence view are on a par, insofar as the representational theory of perception is concerned. A closer look at the ontological differences between states and occurrences revealed that the state view corresponds to retentionalism and the occurrence view to extensionalism about temporal experience. I then presented my own preferred option, simple extensionalism, which endorses the occurrence view and thus the claim that there are experiences, but rejects the particularity assumption in favor of the view that there is only one of them per stream of consciousness. I then argued that if one wants to endorse the one-experience view, one should also endorse the occurrence view. Finally, I argued against Dainton's view, a variety of extensionalism that also endorses the particularity assumption and wants to carve the temporal limits of experiences along the lines of the specious present.

Some might reply at this point that, for all that's been shown, experiences aren't temporally extended at all, but rather momentary *states* representing extended contents. Nothing I've said so far counts against retentionalist theories of perception. So I now turn my attention to them.

Chapter 4: Retentionalism and the Process of Experience

1. On the Principle of Simultaneous Awareness

According to retentionalism, instantaneous (or very short) acts of experience represent temporally extended events.[1] At any moment during periods of conscious wakefulness, the content of such an act spans a brief temporal interval, within which events can be represented as temporally ordered, succeeding one another, or being simultaneous; and the stream of consciousness consists of a series of such momentary experiences, whose contents may overlap.[2]

Why would one be tempted to accept such a view? Husserl (1905/1964) and his followers seem to have been motivated by the principle of simultaneous awareness (PSA), according to which an experience can represent a temporal relation between two events

[1] Contrary to how the view is often presented, retentionalists need not be committed to the claim that acts of experience are strictly instantaneous. Many would take such a claim to be quite implausible. For one thing, strictly instantaneous moments may not exist. For another, physicalists would object that any perceptual system will necessarily take some time to represent anything, because neural processes take time. However, it is sufficient for a viable retentionalism to claim that each perceptual act takes place at some brief temporal interval *R* and during that interval represents a content with duration *C*, where *C* is significantly greater than *R* (see Grush 2009: 597). Furthermore, unlike extensionalists, retentionalists will deny that there is any dependency of *C* on *R*, such that *C* can be represented only if the act has *R*.

[2] For purposes of visualization, see again chapter 1, §3, figure 1.

only if it simultaneously represents its relata.[3] The thought behind this principle seems to be that if I perceive something as moving or otherwise changing, there has to be some time at which I do, so there has to be a moment at which I do.

From what has already been established, it should be clear that I reject that claims such as this could be justified on the basis of introspection alone, since this would require that merely by introspecting my experience I can come to know facts about the relationship between what I experience and the act or vehicle of experience itself, and I seriously doubt that this is possible.[4] It is true, of course, that if I'm currently undergoing an experience of something moving, I'm experiencing motion *now*. But it no more follows that I'm experiencing motion at a moment than it follows from the fact that the president is leaving the building now that he is leaving the building at a moment.

On the other hand, there is a sense in which the president *is* leaving the building at a moment, and in which I am, in fact, experiencing motion at a moment. But this is a sense of 'experiencing at a moment' that an extensionalist can endorse, too. According to extensionalism, if from t_1 to t_3 I'm visually aware of an object as moving, then my

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[3] This is a simplified version. Miller (1984: 109) puts it as follows: "No succession of awareness – no matter how close together in time they come – can, by itself, account for an awareness of succession; it must be the case that an awareness of succession derives from simultaneous features of the structure of that awareness. For instance, an awareness of the succession of, say, two tones (or tone-qualities) must involve *simultaneous* awareness of *both* tones (or tone-qualities). … More specifically, a *continuous* awareness of a tone as enduring must involve an awareness of (at least) some temporally extended part of the tone at any given *instant* of that awareness."

[4] Compare the discussion of Kelly in chapter 1, §2.2; and of Soteriou in chapter 3, §5.

process of experience represents movement from t_1 to t_3. It is true to say, then, for any moment during that interval, that I'm experiencing the object as moving at that moment. I do so in virtue of what I'm experiencing in its immediate temporal environment. Analogously, if I'm walking from t_1 to t_3, then I'm walking at t_2. And while at that moment I may just be raising a foot, this event constitutes a walking in virtue of what I'm doing in the immediate temporal environment of t_2.

So, from the intuitive thought that, if I perceive something as moving or otherwise changing, there has to be some time at which I do, it does not follow that at that time I am in a *state* that represents movement independently of its temporal environment. Likewise, if I perceive something as moving from *a* to *b*, it does not follow that there is a moment at which I am in a state that *simultaneously* represents *a* and *b*.

The principle of simultaneous awareness thus remains unjustified. If retentionalism rested solely on this principle, there would be no good reason to accept it.[5] Retentionalists have to appeal to reasons that are independent of this principle. In what follows, I discuss three such reasons: the argument from the existence of perceptual states, the argument from apparent motion, and the argument against the continuity of consciousness.

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[5] I think that its popularity within the phenomenological tradition is to some extent due to the fact that Husserl had been mislead by the ubiquity of use of the category of act in the same way that the recent analytical tradition has been mislead by the ubiquity of use of the category of state. One guiding intuition of Husserl's and others seems to have been that whatever can be an object of the mind has to be *grasped in one unified act*; and it seems plausible to think of such acts as momentary.

2. Perceptual States Grounded in Occurrences

The argument from perceptual states runs as follows. Surely I can see a bird fly; and when I do, I'm in a state, the state of seeing a bird fly. *Seeing* is a temporally intrinsic relation, analogous to *knowing* or *believing*. The same also holds for *hearing*, *perceiving*, or *hallucinating*. There is a multiplicity of states involved in perception. And since experiences or experiential properties were introduced simply as a means to speak about perceptual relations independently of their veridicality, one may conclude that experiences are states, too, and hence that either retentionalism is true or the identification of retentionalism and the state view false.

The fallacy here lies in thinking that because there are temporally intrinsic relations such as *perceiving* or *seeing*, and experiential properties stand in a certain relation to them, they must be temporally intrinsic as well. This is a mistake. Instead, temporally intrinsic perceptual states are grounded in temporally extrinsic* experiential properties. Let me explain.

Some states obtain in virtue of other states. For instance, a ripe tomato is *colored* at *t* in virtue of being red at *t*. Some occurrences happen in virtue of other occurrences. For instance, one is *doing a Yoga practice* during a temporal interval in virtue of moving through a series of poses during that interval. And some states obtain in virtue of a series of occurrences. For instance, states of exhaustion or elation obtain for some time in virtue

of the sequential occurrence of certain physiological processes during that time. In such cases, however, the state in question has to be temporally extended. Otherwise, it could not exist in virtue of an occurrence, since occurrences are by nature extended entities.

The *in-virtue-of* relation invoked here can be understood as a relation of ontological priority or grounding. It is an asymmetric, irreflexive and transitive ontological dependence relation between two entities, such that the grounding entity *fully explains* or *accounts for* the grounded entity, and is thus more fundamental than it.[6]

The perceptual states under discussion are obvious candidates for states grounded in other states or occurrences. One intuitive reason for this is that they involve an abstraction of some kind. Take, for instance, the state of *seeing*. Suppose that Jim and John see Jane at the same time for some extended period, but from different angles: Jim sees her from the left and John from the right. They are then both in the state of *seeing Jane*, but in virtue of instantiating different experiential properties. The experiential properties they instantiate (or, according to the representational theory: Jim's exing that p_1 and John's exing that p_2, respectively) ground their tokenings of the state of seeing Jane.[7] And the

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[6] For further characterizations of the grounding relation, see Fine (2001) and Schaffer (2009).

[7] Cf. Siegel (2010: 20): "*[P]henomenal states* are individuated by what it is like to be in them. In order to be in the same phenomenal state on two different occasions, what it's like to be in that state has to be the same both times. The state of seeing Franco is not identical to a phenomenal state, because there's no unique phenomenal state for it to be identical to. But it is closely related to phenomenal states, because whenever you see Franco, you're in a phenomenal state." Exchange 'phenomenal state' for 'phenomenal process' and add that the "close relationship" here is the grounding relation, and I agree.

same holds, *mutatis mutandis*, for *hearing*, *perceiving*, *hallucinating*, etc. According to simple extensionalism, these are all grounded in experiential properties that are temporal parts of the process of experience.

Furthermore, notice that the perceptual states in question are all temporally extended states. When I see Jane or hallucinate a pink elephant, I do so for some time.[8] But the existence of such states does nothing to support retentionalism, which would require some reason for believing in the existence of momentary states with extended contents. On the other hand, simple extensionalism can happily concede that such extended states exist, since nothing in the theory would commit one to reject the existence of perceptual states as such. The point of the theory is, rather, that experiences, those entities which are the basic vehicles of phenomenal consciousness, are occurrences, and that hence conscious perception is *fundamentally* one extended process.

3. Grush on Apparent Motion

In a series of papers, Rick Grush articulates and defends a variation of retentionalism, which he calls 'the trajectory estimation model.'[9] Rather than appealing to introspection and the principle of simultaneous awareness, Grush argues that a certain class of "future-

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[8] One caveat: as Vendler (1957: 155) points out, there is also a "'spotting' sense of seeing", as in some uses of 'I just saw that' or 'at that moment I saw him', which according to Vendler is an achievements and thus would have to count as a momentary event that is the boundary of a temporally extended event or process (see chapter 3, §3).
[9] See Grush (2005, 2007, 2008, 2009).

oriented temporal illusions" provides evidence against both atomism and extensionalism, and in favor of his own model.[10] One of them is the phenomenon of apparent motion, which was discovered in a classical experiment by the Austrian Sigmund Exner (1876) and has been extensively studied ever since.[11]

In the experiment, subjects are watching a screen, upon which the experimenter projects two brief sparks of light in succession, which are located at a short distance from each other. If the temporal interval between the two sparks is short enough (about 100ms), the two sparks look to subjects like one single dot of light moving from the location of the fist spark to the location of the second. Suppose the spark flashes at position *A* at t_1 and (100ms later) at *C* at t_3. The subject then has an experience as of a single dot moving from *A* to *C*.

What's remarkable about this is that while at t_2 there is really no light flashing anywhere, subjects still report seeing one stimulus moving from *A* to *C* through location *B*. They thus perceive the stimulus a being at location *B* before location *C*, even though until the spark flashes at *C*, the perceptual system has no way of "knowing" if there will be a second flash at *C*. Of course, if there is no second flash, or if the stimuli are more than 100ms apart, no moving dot is represented.

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[10] See also Tye (2003: 90-91).
[11] For mor on this and other illusions which can be deployed in a similar way, see Dennett (1991), Dennett and Kinsborne (1992), and Eagleman and Sejnowski (2000).

Following Grush (2009: 599), I think we can agree that the motion of the dot and its position when it is represented as being at location *B* "is not in the stimulus but is in one way or another supplied by the perceptual system"; because this is the point of an illusion: it represents the world as being a way it is not. Moreover, it is clear that the system can't somehow predict in advance that it will have to represent motion or a dot as passing through *B*, until it gets information about the spark at *C*. The question is, then, how the perceptual system accomplishes this.

I think the most plausible explanation rests on the hypothesis that there is a delay in the perceptual system between stimulus reception and conscious representation.[12] Due to this delay (of < 100 ms), the reception of a new stimulus can bear on the "interpretation" of prior perceptual events and thus influence what gets consciously represented as happening shortly before the time at which the new stimulus occurs.

As Grush (2008: 155) recognizes, this is the explanation extensionalists should adopt, since it is entirely consistent with extensionalism (as well as atomism) to suppose that what is consciously perceived as being the case at some time *t* can depend on the sub-personal processing of stimuli that occur shortly after *t*.

[12] See Eagleman and Sejnowski (2000), and Rao, Eagleman, and Sejowski (2001), who call this the "smoothing model."

However, according to Grush, the delay hypothesis is problematic. The reason for this is that a delay between stimulus reception and conscious representation is very costly, since, as he puts it, "timely processing of perceptual information is important for sensimotor control, and adaptiveness generally" (2009: 602).

What, then, is his alternative? Grush's own "trajectory estimation model" is basically a version of retentionalism that, like Husserl's, has a forward-looking component. He maintains that at any moment (or brief interval) during a perceptual process, the perceptual system represents its environment in terms of estimated trajectories or processes, such that what one perceives at some time is not only a matter of passive reflection, but rather active interpretation. As he puts it (ibid.: 600):

> [A]t any time t … [the perceptual system] produces as its representation an estimate of the evolution of the perceived event over the interval $[t - l, t + k]$ for some small lag l and some small reach k. There is reason to think that l and k are both on the order of about 100 ms, making the entire estimated interval about 200 ms. The estimate produced at t takes into account all sensory input collected up to and including t, and using that data produces the best estimate it can of the evolution of the process, not only up to time t, but also a prediction of how that process will continue into the very near future.

At some later time *t'* (e.g. 10 ms after *t*) a new state picks up the sensory information that is then available and produces a new estimate based on this new information. If the new sensory information processed at *t'* differs from the estimate produced at *t*, Grush continues, "the prior estimate is wiped, and typically the subject will have no explicit memory of ever having that perceptual content" (ibid.).

If we apply this model to the case at hand, we get the following picture: at t_2, right between the two flashing sparks, a (quasi-)momentary perceptual state *s* represents a spark having flashed 50 ms ago, followed by nothing else, including nothing else now at *B*, so no movement is represented nor predicted. At t_3, however, a new state *s'* represents the second spark, which causes the "empty" content of *s* to be overwritten. Now *s'* represents that there was one moving dot from *A* through *B* to *C*. Again, "the prior estimate is washed" (ibid.: 601).

Grush claims (ibid.: 602-3) that this model is superior to those committed to the delay hypothesis, because not only is there no 100 ms delay, but moreover the perceptual system is credited with "anticipatory representations", which explain a number of other observations, as well.[13]

[13] Grush (2009: 601) mentions representational momentum, the effect that when presented with a series of stimuli that represents or just suggests motion, subjects will typically "overreach" and guess the last stimulus to be much further along on the trajectory than it was.

First of all, contrary to what Grush implies, the inclusion of future-oriented contents into the picture is entirely optional, as far as giving an account of apparent motion phenomena is concerned. After all, what needs to be explained is an apparent "backward influence" of a future stimulus on a past content. Whether or not there are any anticipatory contents seems to be irrelevant here. Moreover, the postulation of future-directed components of perceptual experience is not the prerogative of retentionalist models; extensionalist can, and should, include them into their picture as well, since there seems to be plenty of empirical evidence for it.[14] One doesn't need to claim that at some moment in time, perceptual states represent (or better: *pro*-present?) future events or durations to implement such anticipatory contents. Rather, one might simply claim that the phenomenal character of some parts of the process of experience can causally influenced by anticipations of a certain kind, just as it can be causally influenced by beliefs.

However, the real issue between Grush and the delay model concerns his alternative explanation of the apparent backwards influence in terms of "wiping." It's important to clarify what is being claimed here. Grush states that the prior *estimate*, which is the representational state at t_2, is "wiped" or "washed" by the new estimate produced at t_3. But this can't be right. If at t_2 there is a state that represents a certain content, nothing in the future can simply erase that state nor its content. If indeed at t_2 there was a quasi-

[14] See also Gray (2004, ch. 2). Ironically, a lot of that evidence presupposes long processing times between stimulus reception and conscious representation, which is precisely what anticipatory contents are often posited to compensate for, e.g. to explain how a tennis player can ever successfully hit a tennis ball served at 140 mph.

immediate perceptual representation of the stimulus at that time (or in the case at hand, the absence of any new stimulus), nothing in the future can reverse this. It's not as if the future representation of the second flash somehow time-travels back into the past and erases the subject's then current conscious state. All such a representation could do is erase the short-term *memory* or *accessibility* of the prior representation, according to which in light of the new state, subjects are unable to access the contents of the old state. But this is emphatically *not* Grush's self-understanding of his position, since in one paper he criticizes extensional models precisely for "shunting the phenomenon off to memory" (ibid.), which seems implausible to him, given that the time-scales involved here are very small.[15] So, there seems to be some confusion at this crucial juncture of his account. Apparently he believes that somehow future states can "wipe" prior states or their contents, which is incoherent.

Suppose Grush did accept the interpretation of the "wiping" in terms of memory. The question that would remain is whether the state s at t_2 that is wiped fulfills the conditions for being a perceptual experience. I deny this, since I assume that for a state to count as an experience, it has to fulfill certain downstream conditions, for instance the grounding condition, which is that if a believer undergoes an experience as of φ, then she thereby has the capacity to form a (non-inferential) belief about φ.[16] Plainly, s does not fulfill this

[15] As already mentioned, elsewhere (2008: 155) he recognizes that extensionalists can avail themselves of the delay hypothesis, which is exactly what they should do.
[16] See chapter 2, §6.2.

condition in the present context, since the content of *s* is washed before a belief can be formed. It also does not fulfill Tye's poisedness condition,[17] since the content of *s* is not available for any further cognitive processing.

On the other hand, the delay hypothesis is not as costly as Grush wants to make us believe, because the tasks he mentions, sensimotor control and general adaptiveness, can be accomplished to a large extent by perceptual processing independently of conscious representations. As Gray (2004: 7) observes, consciousness comes too late for that. Furthermore, as already mentioned, where conscious representation does matter, the delay can be compensated by anticipatory elements in perceptual experience.

In conclusion, I think Grush has not made his case for the retentional model, since cases of apparent motion can be readily explained by the delay hypothesis, which every model can accept. In addition, his own alternative explanation is incoherent, and a plausible re-casting of it results in retentional states that aren't experiences.

4. Strawson on the Discontinuity of Experience

Galen Strawson's arguments pose a challenge of an entirely different sort. Although Strawson does not argue directly for retentionalism, he does so indirectly, by objecting to

[17] See chapter 3, §6.

James' characterization of consciousness as a stream and arguing that, contrary to what James and his followers claim, consciousness is often radically discontinuous. Thus, if the viability of extensionalist models depends on the claim that conscious experience is necessarily continuous, while retentionalism does not, his argument could be taken as making a case for retentionalism.

In a nutshell, Strawson's argument is can be stated as follows: Two episodes of consciousness that I'm undergoing at different times throughout the same period of wakefulness amount to phases of the same stream of consciousness only if there are *experiential* connections between them. But such experiential connections are often missing. Therefore, conscious experience is not necessarily continuous; and James' metaphor of the stream of consciousness "inept". As Strawson puts it at one point (2009: 233):

> Even if one concedes for argument that there's always some phenomenologically given connection of *content* between any two successive experiential episodes in the human case, some phenomenologically given *contentual connection*, for short, and that this is so however violently disparate they seem, it doesn't follow that there's always some sort of phenomenologically given – experienced – *continuity*. … Even if it's true that an experiential episode always prompts or conditions its successor in some way, it certainly doesn't follow that there's always some sort of

> experienced sense of connection, conditioning, continuity, or flow. On the contrary. Sometimes the experience is one of a complete break, an inklingless cut.

By "phenomenally given continuity", Strawson means continuity of the experience, as he clarifies in the next paragraph: "it certainly doesn't follow that the process of consciousness is always experienced as continuous, as a stream" (ibid.). And since it isn't, he concludes, we have no reason to suppose that there is such a process in the first place.

Strawson's main point here has already been conceded elsewhere, and could be strengthened as follows: experience does not represent itself as being continuous, since it does not represent itself as being any way. It represents events in the world as being certain ways. Sometimes this may include *being continuous*, sometimes it may not. Sometimes there may even be the experience of a "complete break" or "inklingless cut" between contents that Strawson mentions.[18] In any event, the representation of continuity does not entail the continuous character of the representation relation in question.[19] But if this is right, it also follows that it does not constitute an argument against the claim that experience is continuous, because even if it is, this is not the sort of fact that could possibly be manifest in experience.

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[18] Although I must confess that I'm not entirely sure what he has in mind there.
[19] See again chapter 3, §5.

Of course, the challenge behind Strawson's argument remains: in the absence of the possibility of a phenomenological manifestation of the continuity of experience, why should one accept, as I do, that experience is continuous, and moreover that it is one temporally spread out occurrence? Why not, for instance, just accept that episodes of conscious experience are distinct and temporally separated short pulses, perhaps with significant gaps between them, which stand merely in causal relations to one another?

Rather than taking this question head-on here, a more modest observation will suffice for our purposes: even if it could not be met, this challenge does not count as a reason to accept retentionalism over and against simple extensionalism. As I formulated the view, simple extensionalism claims that there is only one experience *per stream of consciousness.* So far, I acted as if it was clear that streams of consciousness are just periods of wakefulness. But this could be contested. Perhaps Strawson's claim of radical discontinuity amounts to the suggestion that there could be many such streams throughout the day, which are as short as one specious present, with no constitutive connections between them. Nothing that I've argued here would rule out such a view, for extensionalism is essentially a claim about the relationship between the contents of experience and the ontological character of the vehicle. It is not essential to the view how many there are during the wakeful hours of a subject, or indeed a life.

I conclude that retentionalist models are badly motivated, because, first, their initial motivating principle, the PSA, is unjustified. Second, the existence of perceptual states

with temporally extended contents does not amount to an argument that experiences are such states. Rather, such states are grounded in temporal parts of the process of experience. Third, the empirical argument from apparent motion deployed in favor of retentionalism does not support it. Finally, skepticism about the continuity of experience and the Jamesian conception of the stream of consciousness does not amount to a reason to accept retentionalism either, because even if one thinks that experiences are very short, with significant gaps between them, this view is neutral about the analysis of the relationship between temporally extended contents and their vehicles.

This concludes my case for simple extensionalism. I argued for it by elimination; and all relevant alternatives have been eliminated: conscious experiences could either belong to the category of mental state or to that of mental occurrence. If experiences are states, then retentionalism follows; and we have no reason to accept this view. I also argued that a combination of the one-experience hypothesis and the state view would lead into serious problems. On the other hand, if experiences are occurrences, the question becomes how many of them there are per stream of consciousness. If the answer is not "one", then one needs a non-arbitrary way of dividing the stream of consciousness into sub-phases. The only viable view I know of that attempts to do this is Barry Dainton's, and I made a case against his model, as well. Furthermore, I showed that not all contents of experience are temporally atomic contents and hence that temporal experiences cannot be analyzed in terms of successive instantiations of such contents.

Given my final remarks in response to Strawson, one might ask how many streams of consciousness there are per person, or whether there is any non-arbitrary way of counting streams of consciousness at all. There could be as many as uninterrupted periods of wakefulness. There could be as many as there are specious presents. The view that I favor is that there is only *one* per subject, the *entire waking life*. But an argument for this view will have to wait for another occasion.

References

Alston, W. 2005. Perception and Representation. *Philosophy and Phenomenological Research*, 70: 253-89.

Anderson, H. and R. Grush. 2009. A Brief History of Time Consciousness: Historical Precursors to James and Husserl. *Journal of the History of Philosophy*, 47: 277-307.

Augustine of Hippo 398/1991. *Confessions*. Translated by H. Chadwick. Oxford: Oxford University Press.

Bayne, T. 2001. Co-consciousness. Review of Barry Dainton's 'Stream of Consciousness'. *Journal of Consciousness Studies*, 8: 79-92.

Bayne, T. 2005. Divided Brains and Unified Phenomenology. *Philosophical Psychology*, 18: 495-512.

Bayne, T. 2009. Perception and the Reach of Phenomenal Content. *Philosophical Quarterly*, 59: 385-404.

Bayne, T. 2010. *The Unity of Consciousness*. Oxford: Oxford University Press.

Bayne, T. and D. Chalmers. 2003. What is the Unity of Consciousness? In A. Cleeremans (ed.), *The Unity of Consciousness: Binding, Integration, Dissociation*. Oxford: Oxford University Press.

Bengson, J., E. Grube, and D. Korman. 2011. A New Framework for Conceptualism. *Noûs*, 45: 167-89.

Broad, C.D. 1923. *Scientific Thought*. London: Routledge and Kegan Paul.

Broad, C.D. 1938. *An Examination of McTaggart's Philosophy*. Cambridge: Cambridge University Press.

Byrne, A. 2001. Intentionalism Defended. *Philosophical Review*, 110: 199-240.

Byrne, A. 2009. Experience and Content. *The Philosophical Quarterly*, 59: 429-51.

Campbell, J. 2002. *Reference and Consciousness*. Oxford: Oxford University Press.

Chalmers, D. 2006. Perception and the Fall from Eden. In T.S. Gendler and J. Hawthorne (eds.), *Perceptual Experience*. Oxford: Oxford University Press.

Chisholm, R. 1957. *Perceiving: A Philosophical Study*. Ithaca: Cornell University Press.

Chisholm, R. 1981. Brentano's Analysis of the Consciousness of Time. *Midwest Studies in Philosophy*, 6: 3-16.

Chuard, P. 2011. Temporal Experiences and their Parts. *Philosophers' Imprint*, 11/11: 1-28.

Crick, F. and Koch C. 2003. A Framework for Consciousness. *Nature Neuroscience*, 6: 119-26.

Dainton, B. 2001. *Time and Space*. Montreal & Kingston: McGill-Queen's University Press.

Dainton, B. 2006. *Stream of Consciousness. Unity and Continuity in Conscious Experience.* Second, expanded edition. London: Routledge & Kegan Paul.

Dainton, B. 2008a. The Experience of Time and Change. *Philosophy Compass*, 3: 619-38.

Dainton, B. 2008b. Sensing Change. *Philosophical Issues*, 18: 362-84.

Dainton, B. 2010. Temporal Consciousness. *Stanford Encyclopedia of Philosophy*.

Dainton, B. 2011. Time, Passage, and Immediate Experience. In C. Callender (ed.), *The Oxford Handbook of Philosophy of Time*. Oxford: Oxford University Press.

Dennett, D. 1991. *Consciousness Explained*. Boston, Mass.: Little, Brown and Co.

Dennett, D. and M. Kinsbourne 1992. Time and the Observer. *Behavioral and Brain Sciences*, 15: 183-247.

Dorr, C. 2005. What We Disagree About When We Disagree About Ontology. In M. Kalderon (ed.), *Fictionalism in Metaphysics*. Oxford: Oxford University Press.

Dretske, F. 1995. *Naturalizing the Mind*. Cambridge, Mass.: MIT Press.

Dretske, F. 2007. What Change Blindness Teaches About Consciousness. *Philosophical Perspectives*, 21: 216-230.

Eagleman, D.M. and T. J. Sejnowski 2000. Motion Integration and Postdiction in Visual Awareness. *Science*, 287: 2036-38.

Exner, S. (1875) Über das Sehen von Bewegungen und die Theorie des zusammen-gesetzten Auges. [On motion perception and the theory of the compound eye.] *Sitzungsberichte der Wiener Akademie der Wissenschaften*, 72: 156-90.

Fara, D. G. 2001. Phenomenal Continua and the Sorites. *Mind*, 110: 905-35.

Fine, K. 2001. The Question of Realism. *Philosopher's Imprint*, 1: 1-30.

Foster, J. 1982. *The Case for Idealism*. London: Routledge.

Gray, J. A. 2004. *Consciousness: Creeping up to the Hard Problem*. Oxford: Oxford University Press.

Grush, R. 2005. Brain Time and Phenomenological Time. In A. Brook and K. Akins (eds.), *Cognition and the Brain: The Philosophy and Neuroscience Movement*. Cambridge: Cambridge University Press.

Grush, R. 2007. Time and Experience. In T. Müller (ed.), *The Philosophy of Time*. Frankfurt: Klostermann.

Grush, R. 2008. Temporal representation and dynamics. *New Ideas in Psychology*, 26: 146-57.

Grush, R. 2009. Some Recent Directions in the Philosophy and Psychology of the Temporal Content of Perceptual Experience. In J. Symons and P. Calvo (eds.), *The Routledge Companion to Philosophy of Psychology*. London and New York: Routledge.

Hinton, J.M. 1973. *Experiences. An Inquiry into Some Ambiguities*. Oxford: Oxford University Press.

Horgan, T. and M. Potrč. 2008. *Austere Realism: Contextual Semantics Meets Minimal Ontology*. Cambridge, Mass.: MIT Press.

Hossack, K. 2000. Plurals and Complexes. *British Journal for Philosophy of Science*, 51: 411–43.

Husserl, E. 1905/1964. *The Phenomenology of Internal Time-Consciousness*. Bloomington: Indiana University Press.

Husserl, E. 1893-1917/1991. *On the Phenomenology of the Consciousness of Internal Time*. Dordrecht: Kluwer.

Jackson, F. 1977. *Perception: A Representative Theory*. Cambridge: Cambridge University Press.

James, W. 1890. *The Principles of Psychology*. 2 Vols. New York: H. Holt & Co.

Johnston, M. 1997. Postscript: Visual Experience. In A. Byrne and D.R. Hilbert (eds.), *Readings on Color, Vol. 1: The Philosophy of Color*. Cambridge, Mass.: MIT Press.

Kelly, S. 2005a. Temporal Awareness. In A. Thomason and D.W. Smith (eds.), *Phenomenology and Philosophy of Mind*. Oxford: Oxford University Press.

Kelly, S. 2005b. The Puzzle of Temporal Experience. In A. Brook and K. Akins (eds.), *Cognition and the Brain. The Philosophy and Neuroscience Movement*. Cambridge: Cambridge University Press.

Kenny, A. 1963. *Action, Emotion, and Will*. London: Routledge and Kegan Paul.

Korman, D. 2010. Strange Kinds, Familiar Kinds, and the Charge of Arbitrariness. In D. Zimmerman (ed.), *Oxford Studies in Metaphysics*, vol. 5. Oxford: Oxford University Press.

Korman, D. 2011. Ordinary Objects. In E. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*.

Kriegel, U. 2009. Self-representationalism and Phenomenology. *Philosophical Studies*, 143: 357-81.

Le Poidevin, R. 2007. *The Images of Time: An Essay on Temporal Representation*. Oxford: Oxford University Press.

Lycan, W.G. 2003. Dretske's Ways of Introspecting. In B. Gertler (ed.), *Privileged Access: Philosophical Accounts of Self-Knowledge*. Aldershot: Ashgate.

Martin, M.G.F. 2002. The Transparency of Experience. *Mind and Language*, 17: 376-425.

Martin, M.G.F. 2004. The Limits of Self-Awareness. *Philosophical Studies*, 120: 37-89.

Martin, M.G.F. 2006. On Being Alienated. In T.S. Gendler and J. Hawthorne (eds.), *Perceptual Experience*. Oxford: Oxford University Press.

McGinn, C. 1982. *The Character of Mind*. Oxford: Oxford University Press.

Miller, I. 1984. *Husserl, Perception, and Temporal Awareness*. Cambridge, Mass.: MIT Press.

Millikan, R. 2000. *On Clear and Confused Ideas*. Cambridge: Cambridge University Press.

Molyneux, B. 2009. Why Experience Told Me Nothing About Transparency. *Noûs*, 43: 116-136.

Moore, G.E. 1903. The Refutation of Idealism. *Mind*, 7: 1-30.

Moore, G.E. 1910/1993. Sense Data. In T. Baldwin (ed.), *G.E. Moore, Selected Writings*. London: Routledge.

Mourelatos, A. P. D. 1978. Events, Processes and States. *Linguistics and Philosophy*, 2: 415-34.

O'Shaughnessy, B. 2000. *Consciousness and the World*. Oxford: Oxford University Press.

Pautz, A. 2007. Intentionalism and Perceptual Presence. *Philosophical Perspectives*, 21: 495-541.

Pautz, A. 2009. What are the Contents of Experiences? *The Philosophical Quarterly*, 59: 483-507.

Pautz, A. 2010. Do Theories of Consciousness Rest on a Mistake? *Philosophical Issues*, 20: 333-367.

Peacocke, C. 1983. *Sense and Content*. Oxford: Oxford University Press.

Philipps, I. 2009. *Experience and Time*. Dissertation. University College London.

Philipps, I. 2010. Perceiving Temporal Properties. *European Journal of Philosophy*, 18: 176-202.

Philipps, I. 2011. Indiscriminability and Experience of Change. *The Philosophical Quarterly*, 61: 808-827.

Philipps, I. 2013. Perceiving the Passing of Time. *Proceedings of the Aristotelian Society*, 113: 1-24.

Philipps, I. forthcoming. The Temporal Structure of Experience. In D. Lloyd and V. Arstila (eds.), *Subjective Time. The Philosophy, Psychology, and Neuroscience of Temporality*. Cambridge, Mass.: MIT Press.

Pöppel, E. 1988. *Mindworks. Time and Conscious Experience*. Boston: Harcourt Brace Jovanovich.

Price, H.H. 1932. *Perception*. London: Methuen.

Pritchard, H.A. 1950. The Apprehension of Time. In his *Knowledge and Perception*. Oxford: Clarendon.

Quine, W.V.O. 1981. *Theories and Things*. Cambridge: Harvard University Press.

Rao, R., D. Eagleman, and T. Sejnowski 2001. Optimal Smoothing in Visual Motion Perception. *Neural Computation*, 13: 1243-53.

Rashbrook, O. 2010. *The Unity of Consciousness and the Ontology of Mind*. Dissertation, University of Warwick.

Rashbrook, O. forthcoming, a. Diachronic and Synchronic Unity. *Philosophical Studies*.

Rashbrook, O. forthcoming, b. The Continuity of Consciousness. *European Journal of Philosophy*.

Reid, T. 1785/1850. *Essays on the Intellectual Powers of Man*. Cambridge: John Bartlett.

Ruhnau, E. 1995. Time Gestalt and the Observer. In T. Metzinger (ed.), *Conscious Experience*. Paderborn: Schöningh.

Schaffer, J. 2009. On What Grounds What. In D.J. Chalmers, D. Manley, and R. Wasserman (eds.), *Metametaphysics: New Essays on the Foundations of Ontology*. Oxford: Clarendon Press.

Searle, J. 1983. *Intentionality. An Essay in the Philosophy of Mind*. Cambridge: Cambridge University Press.

Sider, T. 2001. *Four-Dimensionalism*. Oxford: Oxford University Press.

Siegel, S. 2006a. Subject and Object in Visual Experience. *Philosophical Review*, 115: 355-88.

Siegel, S. 2006b. Which Properties are Represented in Perception? In T.S. Gendler and J. Hawthorne (eds.), *Perceptual Experience*. Oxford: Oxford University Press.

Siegel, S. 2006c. How Does Visual Phenomenology Constrain Object-Seeing? *Australasian Journal of Philosophy*, 84: 429-41.

Siegel, S. 2010. *The Contents of Visual Experience*. Oxford: Oxford University Press.

Siegel, S. 2012. Cognitive Penetrability and Perceptual Justification. *Noûs*, 46: 201-22.

Siewert, C. 1998. *The Significance of Consciousness*. Princeton: Princeton University Press.

Simons, P. 2000. Continuants and Occurrents. *Proceedings of the Aristotelian Society* (Supplementary volumes), 74: 59-75.

Soteriou, M. 2000. The Particularity of Visual Perception. *European Journal of Philosophy*, 8: 173-89.

Soteriou, M. 2007. Content and the Stream of Consciousness. *Philosophical Perspectives*, 21: 543-68.

Soteriou, M. 2011. Occurrent Perceptual Knowledge. *Philosophical Issues*, 21: 485-504.

Steward, H. 1997. *The Ontology of Mind. Events, Processes, and States*. Oxford: Clarendon.

Strawson, G. 2009. *Selves*. Oxford: Oxford University Press.

Taylor, B. 1985. *Modes of Occurrence*. Oxford: Blackwell.

Travis, C. 2004. The Silence of the Senses. *Mind*, 113: 57-94.

Tye, M. 1993. Reflections on Dennett and Consciousness. *Philosophy and Phenomenological Research*, 53: 893-98.

Tye, M. 1995. *Ten Problems of Consciousness*. Cambridge, Mass.: MIT Press.

Tye, M. 2000. *Consciousness, Color, and Content*. Cambridge, Mass.: MIT Press.

Tye, M. 2003. *Consciousness and Persons.* Cambridge, Mass.: MIT Press.

Tye, M. 2009. *Consciousness Revisited. Materialism without Phenomenal Concepts*. Cambridge, Mass.: MIT Press.

Van Inwagen, P. 1990. *Material Beings*. Ithaca: Cornell.

Vendler, Z. 1957. Verbs and Times. *The Philosophical Review*, 66: 143-60.

Yablo, S. 1992. Mental Causation. *The Philosophical Review*, 101: 245-80.

Zimmerman, D. 2002. God Inside Time and Before Creation. In G. Ganssle and D. Woodruff (eds.), *God and Time: Essays on the Divine Nature*. New York: Oxford University Press.